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AGENDA

April 17, 18, 19, 1967

MODERATOR: ARCHIE D. CRAFT, CHIEF, FORESTRY STAFF

Monday - First Day

8:30 - 9:00 a.m.	REGISTRATION
9:00 - 9:10	INTRODUCTORY REMARKS Archie D. Craft, Chief, Forestry Staff
9:10 - 9:15	WELCOME Lowell M. Puckett, Director, Denver Service Center
9:15 - 10:15	OPENING STATEMENTS Boyd L. Rasmussen, Director John O. Crow, Associate Director Eugene V. Zumwalt, Assistant Director, Resource Management
10:15 - 11:00	KEYNOTE ADDRESS: "THE CHANGING SHAPE OF FOREST LAND MANAGEMENT" Dr. William A. Duerr, Syracuse University
11:00 - 12:00 noon	DISCUSSION AND ANNOUNCEMENTS
12:00 - 1:30 p.m.	LUNCH

Bureau of Land Management
Library
Bldg. 50, Denver Federal Center
Denver, CO 80225

Monday (continued)

1:30 - 3:00 p.m.	LANDS & MINERALS Irving Senzel, Assistant Director, L&M
3:00 - 3:15	BREAK
3:15 - 4:45	RECREATION Eldon F. Holmes, Chief, Recreation Staff

Tuesday - Second Day

8:30 - 10:00 a.m.	WILDLIFE Robert (Bob) Smith, Chief, Wildlife Staff
10:00 - 10:30	BREAK
10:30 - 12:00 noon	FORAGE PRODUCTION Glen D. Fulcher, Chief, Range Staff
12:00 - 1:30 p.m.	LUNCH
1:30 - 3:00	SOIL AND WATERSHED Wm. (Bill) Mathews, Chief, S&W Staff
3:00 - 3:15	BREAK
3:15 - 4:45	TIMBER PRODUCTION Archie D. Craft, Chief, Forestry Staff

Wednesday - Third Day

8:30 - 10:00 a.m.	PROTECTION Leon R. Nadeau, Chief, Resource Protection Staff
10:00 - 10:30	BREAK
10:30 - 12:00 noon	GUIDES TO DECISIONS Robert A. Jones, Chief, Office of Program Development
12:00 - 1:00 p.m.	LUNCH
1:00 - 2:15	OPERATIONS Ed Zaidlicz, Chief, Division of Resource Program Management
2:15 - 2:30	BREAK
2:30 - 3:30	HUMAN RESOURCES Ed Carroll, Chief, Division of Personnel
3:30 -	WIND-UP George L. Turcott, Chief, Division of Resource Standards and Technology

CONFEREES

Washington Office

Guy Baier
Ed Carroll
Archie D. Craft
John O. Crow
Dr. William A. Duerr
Glen D. Fulcher
Eldon F. Holmes
Robert A. Jones
Wm. Mathews
Leon R. Nadeau
Paul Sanger
Irving Senzel
Robert Smith
George L. Turcott
Ed Zaidlicz
Eugene V. Zumwalt

Alaska

Wayne A. Boden
Robert C. Krumm
James H. Richardson
James W. Scott

Arizona

Riley E. Foreman

California

Eugene A. Drown
Lester C. Dunn
H. Curt Hammit
John F. Lanz
Rex J. Morgan
Richard L. Thompson

Colorado

Max W. Bridge
Robert F. Bucknam
John C. Clark
E. I. Rowland
Winston B. Short
R. G. Thompson
Arthur Zimmerman

Idaho

Kenneth W. Jensen
Walter Jones
Maurice W. March
Richard Tindall
Delmar Vail

Montana

James M. Linne
Richard D. McEldery
Don C. Mellgren
Lloyd W. Morrison
Henry K. Noldan

New Mexico

Wm. J. Anderson
Richard M. Kerr
Morris A. Trogstad

Nevada

Joe Kastelic

CONFEREES (Cont.)

Oregon

Paul W. Arrasmith
Harry M. Bruce
Chester E. Conrad
Joseph C. Dose
Rodney O. Fety
George C. Francis
Otto C. F. Krueger
John W. Riley
Donald Z. Robins
Donald S. Schofield
Murl W. Storms
B. T. Vladimiroff

Utah

Horace E. Jones
Lorin E. Welker

Wyoming

Richard E. Cleveland
Rex D. Colton
John R. Killough
Donald D. Riddle
Hugh Wall

Denver Service Center

Jack A. Berkshire
Euel L. Davis
Francis J. Horak
Myrvin E. Noble
Delmar Price
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Joseph E. Townsend
L. Christian Vosler

Portland Service Center

Karl Bergsvik
Herbert L. Haglund
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CONFERENCE ON MULTIPLE USE MANAGEMENT OF FOREST LANDS, DENVER, COLO. April 17, 18, 19, 1967

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- Row 4 - Robert J. Smith, William L. Mathews, Chester E. Conard, Robert C. Krumm, Richard L. Thompson, Edwin Zaidlicz, John O. Crow, Winston B. Short, Wayne A. Boden, Henry K. Noldan, James M. Linne, Don C. Mellgren, Lloyd W. Morrison, Joseph C. Dose
- Row 3 - Archie D. Craft, Rex D. Colton, Joseph P. Kastelic, Donald J. Schofield, Richard M. Kerr, John W. Riley, John F. Lanz, Robert A. Jones, Eugene A. Drown, James H. Richardson, John C. Clark, Euel L. Davis
- Row 2 - Royal G. Holl, John R. Killough, Charles L. Thomas, Dr. Wm. A. Duerr, Otto C. F. Krueger, Richard W. Tindall, Riley E. Foreman, Paul W. Arrasmith, Delmar D. Vail, Francis J. Horak, Delmar Price, Lorin J. Welker, Herbert L. Haglund, Horace E. Jones, Frank W. Stanton, L. Christian Vosler
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MAN AND THE FOREST

A Conference on Multiple Use Management of Forest Lands

USDI, Bureau of Land Management
Denver, Colorado, April 17, 18, 19, 1967

* * * * *

Moderator - Archie D. Craft
Chief, Forestry Staff

837-299

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OPENING STATEMENT

by

Boyd L. Rasmussen
Director

I want to welcome all of you to this multiple use conference on the forest lands. I will not be with you today personally but I am here with you in a different way. I am at my desk in Washington, looking out the window on a beautiful spring day. Maybe I should be out playing golf.

At this conference we are inaugurating a new training technique--the use of video tape. Video tape is used in many places, as a teaching method in schools, and in a way in which most of you are familiar, as the instant replay you see on your TV sets. This is the first use of video tape for BLM purposes but we can visualize many uses for it, particularly as a training aid. With this technique I can speak directly to you. Similarly your conference in Denver is being recorded on tape and what is discussed can be brought to many of our other employees in this manner.

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The use of video tape is only one example of what we in the BLM must be doing to apply advancing technology to our programs. We must be constantly alert and on watch for new developments which will allow us to perform our jobs as land managers more efficiently, more effectively, and more expeditiously.

As far as acres of land are concerned, we in the BLM are part of the largest land management agency in this country. We have a big job to do and few people with which to do it. We cannot do it with horseback concepts. We can do it only by modernizing our outlooks - our techniques - and the composition of our programs. These must be flexible. These must be able to meet the changing needs of our society.

Of critical need at this time is the necessity of thoroughly identifying the outputs of our programs. These must be quantified. We must be able to show concrete benefits which we are realizing. These benefits must be measurable either in terms of product, such as thousands of board feet of timber, or as services we are providing. This is the concept of PPBS and I am in favor of this concept. Much needs to be done to make it a workable tool but the concept is sound.

1-2 p.p.

We cannot merely say today we want to do a program because it is needed. We must be able to show how, why, and what it provides. We must be able to show that we need so much money and with this money we will realize certain identifiable benefits. We cannot say, as we have said in the past, that we need "x" number of dollars to build "x" miles of fences or to reforest "x" number of acres. We must be able to say that with "x" number of dollars we will produce a quantity of timber that would not otherwise be realized. We must also be able to identify related benefits, such as providing additional wildlife habitat, preventing a certain amount of erosion, or realizing other benefits. Some refer to this as a package. I call it a multiple-use package wherein both costs and benefits are weighed.

Some projects may have a negative benefit if thoroughly analyzed. For example, through making a timber sale in a marginal area, we may create negative values such as increased erosion, loss of recreational values, or may destroy critical wildlife habitat. Each project, each package must be analyzed carefully and separately to determine its liabilities and its assets. Guides for measuring these are being developed. However, it will be the total package that all of us must look for and learn to use.

We must determine influences. Everything we do has a resultant impact on other areas, on other programs, both within and outside of the Bureau. By the same token, outside influences over which we have no control will have an impact on our present and future programs. It's a two-way street. Our programs, no matter how small, have an influence far beyond the immediate area we are working in. The area outside also affects the nature of our programs - what we do and why we do it.

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This conference is on multiple use management of forest lands but the basic concepts of identifying inputs, outputs, and influences apply to all of our lands and to all of our programs. The principles of multiple use land management are the same.

The pattern of the conference illustrates the concept of multiple use. First you are going to discuss separately each resource category--timber, forage, wildlife, recreation--to review technology associated with potentials, costs, outputs, and benefits for each. Then, after all these potentials are on the table, you must discuss the process of decision-making. Multiple use decision-making is one of our most difficult jobs; there just are no simple criteria to apply.

In closing, I wish time and other things would have made it possible for me to be with you today. However, there are able members of my staff there to lead the discussions and to answer the questions which I hope you will ask. Those of you from the State and District offices are there to participate. Ask your questions! Make your comments! Be a participant! And the best of wishes for a successful conference. Thank you.

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P.P.

CONFERENCE ON MULTIPLE USE MANAGEMENT OF FOREST LANDS

Conference Theme

By

John O. Crow
Associate Director

It is with real pleasure that I welcome you to this conference this morning. We have had forestry conferences in the past. We have had soil and watershed conferences. We have had range management conferences - but this is the first conference we have had - on this scale - which deals with the overall multiple use management of certain of our lands. I say certain of our lands because this conference will only be discussing forest lands. Some of the considerations which will be discussed will be applicable to other types of land but the primary emphasis in this particular conference will be the multiple use management considerations on forest areas.

Why has this conference been set up? What do we hope to gain from it? A great deal of time, effort and money are being spent in bringing this conference to you and you to the conference. Conferences in the past pertaining to the management of forest areas have been generally for foresters, by foresters and with foresters, where we mostly talked about timber production. Don't we want to continue that way?

I'll qualify the answer to that question by answering yes and no. Yes! We need forestry type conferences wherein the technical aspects of timber management are discussed in detail and the effect of timber management programs on other forest uses is considered.

I'll say "no" in the recognition that we must all assume our responsibilities with respect to forest land management - not just timber management - but the management of all the resources of the forests. In the past, foresters - the men who worked most intimately with our forested areas - the men who were most familiar with the problems on these areas - usually had to assume the management responsibilities on forest lands.

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This had to be done partly through default and partly due to the old unwritten concepts followed in the management of our lands and in the development of the Bureau. Foresters managed forest areas. Range men managed range areas. Foresters ran forest districts. Range men

F. 3
P. P.

ran range districts. Most districts were classed as being either range or forestry districts - and we must candidly admit that according to which category the district was classed - that this was often the dominant consideration in the management programs for that district.

Over the years there has been a gradual evolutionary change in these concepts. Now we have the Classification and Multiple Use Act which has given us a positive impetus or, I should say, a mandate to manage public lands for multiple use purposes. Actually, the concept of multiple use is not new to the Bureau or to most of its employees. However, we did lack clear-cut authority to manage the Bureau lands under the concept of multiple use until the Classification and Multiple Use Act was enacted. Now we have a legislative base--albeit temporary--upon which to apply our multiple use concepts. For the first time the Congress has entertained the possibility that some of the Public Lands should be retained in Federal ownership.

Our organizational structure in the districts has been changed to easier implement the concept of multiple use in our management programs. We now have district managers and state directors who are responsible, regardless of their technical background, for the implementation of multiple use considerations in all their programs. These men have to be managers - not range men, foresters, or other specialists. Regardless of what they were, they must now be managers. If they can't become this by adaption, training, interest, initiative, and willingness to allow others to help and advise them - then they are in the wrong job.

This conference is particularly aimed at those of you who are now, or aspire to be managers in the future. You are the ones who help us establish policy. You are the ones on whom we count to coordinate and see that these policies are implemented on the state and district levels. Therefore, it is important - and in fact vital - that we continue to strive for a mutually clear understanding of the direction the management of our lands must take. We must have a common understanding of what are the multiple use considerations in our programs.

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This conference is directed toward the management of forest lands but it is not a technical forestry conference. As you can see from the agenda each of the traditional Bureau programs is represented. Each will be discussing his specialty as it pertains to forest land management. No pat formulas for the management of forest lands are likely to be adopted during this conference. We hope that you don't want or expect any. By a free exchange of ideas, we may agree on some general criteria to guide our future policy and program decisions.

B-3
P.P.

In the management of land we are dealing with a living environment. Everything we do changes that environment. Even if we do nothing the environment changes, since by nature land is always changing. Sometimes these changes occur very slowly but they do occur. Sometimes they change very rapidly when a fire burns an area, or a road is built, or logging of a timber sale area is commenced. Whatever the cause of these changes and however fast they occur they all have an effect on the total environment and on all the potential uses of that area.

These changes are involved and complex and we would be naive to say we understand them all, but we should have a broad understanding of some of these interrelationships between different uses. Understanding some of these interrelationships, we can better plan our management programs. We can better do our job as land managers. We can better serve the needs of the people for the products and services from these lands.

Ideas which we will be discussing now may be outmoded in a few years. The world is in a great stage of change and we must be able to adjust to this change. The expressions are sometimes heard from our own employees: Why doesn't the BLM settle down to one type of organizational structure? Why don't we settle down to one set of plans that we can follow: What's all this business about Unit Resource Analysis and PPBS? Why do we always have to be changing?

837-299

My answer to these questions is that we must change. We cannot stay still with one set of ideas, one set of so-called plans, one set way of doing things. The world is moving and we must move with it. I'm sure the Indians of North America asked similar questions when the white men came over the horizon in their covered wagons and began to change their way of life. I'm not sure that all the changes have been for the better but they occurred nonetheless. The same is true today - nothing remains static. We cannot afford to remain static while the world around us changes. A point for emphasis is that we shouldn't change procedures or organization for changing sake alone, but rather in an effort to avoid being run over by progress.

Our programs will be subjected to pressures that we can't even visualize today. What these pressures will be or where they will come from, I don't know. But I do know that they will occur. We must do our best to anticipate them and be ready and prepared to adjust when they do occur.

There was an interesting article in a Washington paper about six weeks ago. Similar articles have appeared in other papers, magazines and books. This one was entitled "World Population Growth." Just

one highlight from this article was that it took a million years for world population to reach the one billion mark in 1800. In the next 167 years to the present, world population more than tripled. And now it will take only 15 years to add the next billion. We read facts such as this and say - that's interesting - but do we really think about them and wonder how these things are going to affect our job as managers? What should we be doing now? Where should we be looking toward the future?

With growth such as this we know that there is going to be increasing pressure for products - products of all sorts - from the public lands. We must begin seriously thinking of what products we can supply - where are they located and how can they be developed? These products will include everything that will be discussed at this conference whether it be water, timber, wildlife, forage, minerals or open space.

Multiple use must not be an abstract theory to us who are land managers. It must become a way of thinking, a way of planning, a way of action if we are to fulfill our role as land managers.

Throughout this conference I hope that each and every one of you are thinking, as you hear the subjects presented, "How can I use this information? What effect does this knowledge or data have on the programs I am involved in? How can I do my job better as a land manager?" If we stimulate your thoughts, if we make you more aware of multiple use considerations as applied to forest lands, if we give you some of the answers you need for the development of your programs, then this conference will have been a success. We encourage your active participation and contribution.

837-299

B.H.
R.P.

CONFERENCE ON MULTIPLE USE MANAGEMENT OF FOREST LANDS

The BLM Program

by

Eugene V. Zumwalt
Assistant Director

Director Rasmussen broadly outlined the forces which are profoundly affecting the use of our resources.

Basically, the mission of every Government agency is to produce and distribute goods and services to the American people. On the public lands this is made possible through the use of human, capital and natural resource inputs. From an economic standpoint these resource inputs are factors of production which provide a flow of resource service over time. Such service, or output, must exceed the input to justify continuation.

In the case of publicly-owned resources, we are seeking to measure demand for the multiple use of these resources and how we can efficiently produce what is wanted. This is not easy. Tastes, incomes, needs, and technology all change over time and shift the demand for natural resources. Some of these factors change slowly and are manageable while others are exceedingly volatile and difficult to predict.

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The rapid increase of urbanization has made the demand for outdoor recreation the most accelerated demand pressure we have on the public domain. You have seen the news stories on the shortage of developed recreation sites in the West in the summer peak season. In certain areas the sites are being subjected to over-use in spite of the several thousand camp sites developed by the Forest Service and the National Park Service. At this point BLM has 150 developed sites to add to the supply of facilities.

If we look at the future demand situation we find that the Pacific, Mountain, and Alaska census divisions, where our lands are located, are expected to have a population increase of five and a half million people between 1965 and 1973. These will add to the demand for outdoor recreation in the West an estimated 126 million visitor days of intensive use type recreation. This makes no allowance for increased pressure from Eastern tourists. Our most recent, and only,

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research on demand pressure showed that 20 campgrounds on public lands in Colorado received about half of their use from out-of-state people, largely from the Central states to the East.

We are striving to catch up with present demand and prepare for future demand, by inventorying, evaluating, and developing lands with recreation potential.

With regard to our valuable soil and watershed resources, most of the Bureau-administered lands are situated in the arid and semi-arid zone at intermediate elevations. Water production potentials from these lands are limited. The stabilization of deteriorated watersheds requires water to sustain increased vegetative cover, and reduction of flow velocities will affect water yields to some extent. However, extension of flows, improvement of water quality, reduction of sedimentation, control of flood peaks, and on-site response will more than compensate for such reductions.

All too often public land watersheds are contributing high sediment discharges to major river systems. For example, the Rio Puerco tributary of the Rio Grande basin yields about 5 percent of the measurable water above Elephant Butte storage reservoir while producing one-half of the sediment.

While the improvement of vegetative densities or reestablishment of cover is an objective of the watershed program, removing all domestic livestock from rangeland watersheds would not solve the problem. Much of the damage now caused by erosion would not be halted through elimination of grazing use. The results of disruption of the equilibrium between vegetation, soil, and water within the watersheds has initiated an imbalance with accelerated erosion resulting. This trend is reversible through an application of selected conservation practices either in combination or singularly, including land treatment measures, water control structures, and proper resource use management. Upland watershed treatment is complementary to river system control and must be considered as an alternative and incorporated into all water development programs.

The need for livestock forage, nationally, is related to the national demand for meat and other livestock products. The need for forage from the public lands is also related to the need for a stable livestock industry and strong local economies in our Western communities. The production of livestock forage and proper grazing use by livestock is an important goal of the Bureau's program. At the local level, forage production from public lands is a scarce item and satisfies an important need. It is most important to 26,500 families who currently hold fifteen million AUM's of grazing privileges. The "new"

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dollars produced by these ranching units into the local economy is also important to the many allied businesses which depend upon livestock production for their livelihood.

Proper livestock use has a scope broader than just forage production. It is an important management tool in the improvement of other resources. From the results of actual demonstrations, we now know that through the use of improved grazing systems, such as rest-rotation grazing, we actually can thicken the grass density on depleted watersheds. Thus, proper grazing use will increase the value of the watershed to other on-site uses and downstream interests. Where important wildlife habitat exists, proper livestock use will improve this valuable resource. Research results have proven that proper use of bitter brush by cattle can improve the vigor and yield for wildlife purposes. This was not thought to be possible a few years ago.

The key words here are proper grazing use. Fortunately, proper range utilization by domestic livestock does not seriously compete with other uses.

To accomplish the goals of a stable dependent livestock community and the enhancement of other renewable resources from the public lands, the Bureau's range management program in the future will include: the preparation of allotment management plans with the establishment of grazing systems followed by; capital investments needed to implement these grazing systems; and finally, continuing supervision, studies, and updating of management plans.

The Bureau will need the assistance of the livestock operators to carry out this level of management and much of the responsibility for assuring correct range use will go to the local livestock operator. With careful planning and close cooperation, we can meet the public needs with little or no reduction in livestock numbers.

Demands on fish and wildlife resources are ever increasing. Let me illustrate with a few examples. The public lands presently provide about 9 percent of sport hunting and fishing in the West. In the Intermountain region they supply about 20 percent of all the hunting. They contribute about 20 percent of all sport and 60 percent of all commercial fishing in Alaska. Last year hunters and fishermen spent over 10 million days in pursuit of wildlife and fish on the public lands. In doing so, sportsmen expended an estimated 130 million dollars.

Over one-half of the anadromous fish commercially harvested in territorial waters of the Pacific Ocean belonging to the United States were spawned on the public lands. Their value is estimated to be 40 million dollars annually.

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Our true native Americans, the Eskimos and Indians, depend heavily upon wildlife and fish from the public lands for essential requirements of food, clothing and shelter.

Fish and wildlife are scarce products. In a Bureau-wide sense, demand far exceeds the supply. The only way the animals and fish can be maintained to provide sustained yields is through rationing by means of season and bag limit restrictions. As long as hunter and fishermen success remains satisfactory, demands will continue to exceed supply. However, most of the public land fish and wildlife habitat is deteriorated and production is down. Our job is to restore environmental quality and provide access for hunting and fishing.

The Nation's needs for wood are rising steadily. Demand for pulpwood is projected to triple by the year 2000; plywood and veneer consumption to increase 2.7 times and lumber use to rise by 43 percent in this period. These are projections from the most comprehensive studies available.

The Bureau of Land Management, now producing approximately 1.3 percent of the Nation's total softwood supplies, is not, of course, going to be able to fill all of these increased needs. It will, however, be called upon to supply an increasing share of these demands.

BLM's coming 5-year program calls for timber production of 1.330 billion board feet annually in western Oregon and 140 million board feet annually on the public domain forests. The western Oregon figure includes an intensified thinning and mortality salvage program of 140 mm board feet annually. The public domain program does not yet represent full potential. A lack of forest industry utilization capacity has held demand to a level at which full allowable cut potential has not been universally realized.

We are just now setting out on a promising and challenging intensified forest management study entitled "Guides to Land Management." For western Oregon we are developing a computerized forest simulator that will allow us to test the impacts of a number of management alternatives over periods of up to two forest generations (100 to 150 years). Smaller, specific component models to test and predict such things as the most economical reforestation methods are also being devised.

In Alaska we are engaged in a 5-year forest inventory of the Bureau's vast holdings of some 35 million acres of commercial interior forest land. Preliminary estimates indicate 167 billion board feet of merchantable timber with a 1.4 billion board foot potential annual sustained yield allowable cut. Coupled with this inventory is a planned silvical study of the Alaska white spruce to provide knowledge for an informed management of this extensive resource when demand for it develops.

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To assure continuity of our resources, protection from destructive elements is required. The degree of protection required varies with the values of the resources and their exposure to hazard and risk. A fire protection study is being completed to establish protection standards based on resource value classes. Protection value classifications will be based on available natural resources, land use, fire occurrence records, and the various factors involved in fire control operations.

Present day fire control relies heavily on air operations and the use of highly trained fire suppression crews. The trend is toward greater use of such forces. To provide better coordination and direction of Department of the Interior fire control operations in the West, the Boise Interagency Fire Center was established, in 1965, in temporary quarters at Gowen Field. The Center coordinates fire training and fire preparedness, and furnishes manpower, equipment and supplies needed by land managers in coping with large fires.

When new facilities now being developed are completed in 1969, they will be shared by the Bureau of Land Management, Forest Service, and the Weather Bureau.

The protection of forest and range resources from insects and disease is an increasing problem. Though somewhat cyclic, the incidence of infestations requiring control appear to be becoming more frequent. The use of pesticides is the most common control practice, while forest management to remove insect threats is also being practiced. As a result of limitations placed on the use of DDT, the scientists have now developed new compounds which are effective in destroying insects while at the same time leave a minimum of harmful residues damaging to other forms of life. The Bureau is cooperating fully in the forest insect control program throughout the West.

Unauthorized use or trespass removal of renewable resources continues to be a problem. Generally, we believe trespass is decreasing in rate of occurrence and should continue to become less of a problem as the area management program evolves and the public becomes better acquainted with means of obtaining appropriate authorizations for the uses they wish to make of renewable resources.

Better boundary marking will also help. Unfortunately, at least from the perspective of managing renewable resources on the public land, the shotgun pattern of public and private land presents serious problems. Even though the original surveys might have been executed in an excellent manner and permitted the original private land patentee to clearly identify his boundaries, the passage of years wrought many changes.

If the corners are gone or cannot be found they can be reestablished only by a cadastral resurvey. A resurvey requires that search be made for all corners set in an original survey. Only after all evidence is searched out can the missing corners be reestablished. This is necessarily an expensive operation.

State selection surveys in Alaska are being accomplished by a modern and time-saving process. Hovering above the ground in a helicopter up to heights of 300 feet and using the latest in telemetry equipment, the field work is being completed in a minimal amount of time. Several unique features make this possible: good, up-to-date maps, an extensive net of horizontal control data, the helicopter, hoversight, the autotape, an electronic distance measuring device, and the portable electronic computer. During an average 8-hour day, 50 corners can be surveyed, and without the computer it would take 100 hours of computation to furnish information to extend the surveys.

Good access is an essential part of proper resource management. Our public lands development roads and trails program includes funds for survey, design and procurement of easements. These roads and trails provide year-round access to the resources for which the Bureau has the management responsibility. The standard of road is based primarily upon the type and amount of use. The average daily traffic estimate or actual count is the most effective means of determining standards. The type of use may vary based upon the management requirement. It should be borne in mind that PLD roads are not farm or ranch-to-market roads but are for the purpose of expediting our multiple-use program.

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The maintenance program is a vital part of any road system. Our maintenance program has in the past been limited, but for the past four years the need has been recognized and adequate funds have been provided.

No discussion of BLM natural resource management is complete without mention of the Job Corps Conservation Center program. Conservation centers, of which there are 85 operated by the Departments of Interior and Agriculture, offer a combined program of basic education and work experience to underprivileged youth between the ages of 16 and 22 who need to develop the skills and work habits necessary to find and hold jobs and to become useful members of society.

The Bureau operates five such centers: At Tillamook and Grants Pass, Oregon; Mountain Home, Idaho; Price, Utah; and Kingman, Arizona. Many enrollees can neither read nor write when first recruited. Most cannot do a full day's work until after a couple of weeks of eating three square meals a day. Some have never had a bed all to themselves.

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Normally, the program will consist of approximately equal periods of education and work, usually on a weekly alternation. The vocational training provided in conservation centers is not intended to make a corpsman into a skilled journeyman worker but rather to give him the basic skills to qualify for entry-level positions with career potential.

Work projects undertaken by the Bureau's five conservation centers run the gamut of conservation and recreation development activities conducted in other Bureau programs. There are two principal differences, however. First, the projects performed by Job Corps are those which probably never would be accomplished otherwise or which could not be undertaken for many years. Secondly, the training and work experience received by the corpsmen is at least equal in importance to the amount of production accomplished.

Thus through the best available technology and management principles, BLM assures continuity of multiple use of our renewable natural resources.

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KEYNOTE ADDRESS

by

Dr. William A. Duerr
Syracuse University

The Changing Shape of Forest Land Management

Our talk at this meeting is already touching upon such themes as multiple use, long-range planning, cost-effectiveness budgeting, and the prospect of accelerated change. This is forward-looking talk. It treats of the future and emphasizes the future. Here is precisely what one should expect at a gathering of land managers. Management is decision making, and decisions cannot be made about the past--or about the present, either: Only the future is subject to decision. The context of management lies in the future.

Considering that tomorrow is standing here, as it were, in the wings of our stage, I am encouraged to listen to its prompting and to undertake some predictions. I propose to talk with you about the circumstances of forest land management in the years ahead. My purpose is to make explicit the interest we all have in the future.

I will be talking about a future that lies variously from ten to sixty or seventy years hence. For the most part, I will not specify when I expect a prediction to materialize. In other words, I will be speaking about directions of change and will be treating of rates only by implication.

I confess that I am a bit frightened by my own rashness--until I remind myself that I am with friends, and furthermore that as an aging mortal I shall not have to answer in person for my lack of foresight, and furthermore that for the occasion of this meeting I have been granted authority without any accompanying responsibility. Surely, if ever a man was well situated--in all, at least, but wits--to discuss what lies ahead, it is I.

Now, just to be orderly about it, I will number my predictions as I go along. There will be thirteen of them. The number is happenstance, though when I stop to think of it, no other number would suit the present venture so well as this one.

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I

My first forecast is really more of a premise. It is that change will continue, that the pace of it will be faster as time goes on, and that the aspect of change which will most directly concern us as land managers will be social development and notably the economic growth of the United States. Economic growth will take the form of increases in the national output. I am speaking of the national output in real terms, expressed in dollars of constant value. In recent years, the total has been rising at the rate of about three percent annually. The national product per capita has been rising, too, at a slightly lower rate. Such rates of growth will be at least maintained in the future, so that the absolute amount of the growth will get larger. This is assuming that we will escape the destruction of wars and other catastrophes.

The notable feature of economic growth will be an increase in the value of human labor. All kinds of labor will benefit: not only common labor, but skilled workers as well, and even the professional and managerial classes. The value of labor will rise because national output per man-year will have risen, and higher output will mean higher income, which is the measure of labor's value. People will be earning more and more wages or salaries or other payments for a year's work. Employers will be incurring more and more cost per man-year for the use of this increasingly precious resource, and still their demand for the services of the gifted and trained person will be higher than we have ever known.

II

My second forecast concerns the origins of our future economic growth. Some of this growth will of course stem from the upsurge in population. Again, some will arise from enlargement of our national stock of capital goods such as machines, buildings, and forest resources. However, by far the greatest share of economic growth, possibly half of the total, will come from expansion of knowledge and its application to the arts of production and consumption. That is to say, economic growth will stem primarily from improvements in technology. Technology in future will be, as it is today, our prime resource.

One can expect technology to grow by means of our national effort in research and development, and to be transmitted through bigger and more effective educational programs. Our national standard of life will be a function of our research and education. Here I mean to include both formal education and the various kinds of continuing education, such as self improvement and on-the-job training.

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III

Third, I predict that the rise in labor productivity which will characterize national economic growth will tend to proceed at a slower than average rate in silviculture, logging, and the traditional forms of wood-using industry. That is to say, while labor is becoming scarcer and most industries are finding means to economize in its use, equally efficient means will be hard to devise within much of forestry. Managers can respond initially in one of two ways: They can reduce the labor intensity of their programs, cut down the number of man-days of work put into their land or their other capital, and thus run the risk of reducing the physical abundance of their products. On the other hand, they can maintain labor intensity and pay the wage bill by raising prices, thus reducing the economic abundance of their products.

What a choice! In an effort to escape it, society will strive in various directions. One direction will be to increase the efficiency of labor use in forestry and its related industries by introducing new applications of genetics and engineering in the process of production. To the extent that such moves succeed, we will see retirement of submarginal lands from silviculture analogous to the retirement of submarginal agricultural lands. Another direction in which society may strive is toward greater government subsidy for forestry operations. Still another is toward replacing forest goods and services by substitutes that can be produced with a less lavish outlay of resources.

IV

My fourth prediction concerns the manner in which the wood-using industry will adapt itself to national economic growth and to rising labor values. It will adapt by turning more and more away from those forms of wood raw material that require human attention and judgment and care and, above all, handling. At the same time, industry will make correspondingly greater use of raw materials that are uniform and that lend themselves to being moved by belt or pipeline. This means a flight from the log and the board, where the size and quality of the individual piece dominate the production process. It means an ever wider adoption of the wood chip and particle as raw material for reconstituted products, notably silvi-chemical products. These developments will be abetted by concurrent changes in consumption technology, in which consumers will seek more efficient and easy means for satisfying their material wants.

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The implications for timber management leap at once into our minds: final tree harvest at a relatively young age, an emphasis upon mechanization in silviculture, a de-emphasis of intermediate silvicultural treatments. Here will be the means for simultaneous physical and economic abundance--that is, the means for keeping somewhat abreast of the national trend in labor productivity.

V

Fifth, I foresee that our efforts toward technological development and toward the saving of labor will lead to considerable automation in resource management. The most startling developments will come where the dimensions of management can be measured in terms of numbers.

I think that within the coming decade, research workers will have succeeded in describing portions of BLM's resources and BLM's process of resource management as systems of variables measured in numbers. The research workers will have written the mathematical equations and the tabulations that estimate how the variables are related, one to another: how, for example, the allowable cut of timber would be affected if certain lands were set aside for recreational use--and how the income of the region would change if recreational use were substituted for timber use on certain lands. We can picture equations and tabulations and other necessary data stored in a computer and the computer programmed so as to predict the consequences of the alternative courses of action described to it. We can picture the resource manager reaching for the telephone to obtain from the computer stored information--for example, about the extent and success of his forest plantations. We can picture him asking for a forecast of the forest conditions, allowable cuts, employment, revenues, and so on that would follow if he should plant this recently cut-over tract or allow it to restock naturally.

What I am describing is not management by a computer. It is the performance of drudgery--of intricate and lengthy calculations that we would scarcely undertake by ordinary clerical means, but which the computer can accomplish in the twinkling of an eye, once it is programmed for the purpose. The manager is freed for the performance of his highest function, decision making. Furthermore, he is supplied with the best available bases for enlightened decisions.

(Parenthetically, I should mention that the research I am speaking of is already under way. The long-run aims of the research are those very aims, those far-out aims, that I have described. The research project is entitled "Guides to Land Management." The Bureau

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has arranged with the School of Forestry at the University of California for cooperation on a major part of the work. Some of us in the College of Forestry at Syracuse, New York, have also taken an interest in the project, and next fall we hope to be joined by a Bureau forester, yet to be chosen, who will push the research along and at the same time take studies toward an advanced degree in forestry economics. But let me return now to my predicting.)

VI

Sixth, I foresee that as a consequence of automation, more decisions will be made centrally. It will be, not only possible, but also efficient and wise, for some decisions now made on the ground to be made, instead, in the district office. And by the same logic, some of the decisions now taken in the district or the state will in the future be taken in Washington. The trend toward centralization will be an inevitable consequence of our expanding knowledge, our social development, and our search for economy in the use of human labor.

I think that an increase in centrally-made decisions will not be accompanied by any reduction in the decision load of on-the-ground and local managers. What will happen is that the total flow of questions to be deliberated and acted upon will be measurably enlarged; the volume processed centrally will march in step with advancing decision technology; and the share carried locally will change, not in size, but only in character: The manager on the spot will have the chance, as never before, to focus upon those decisions that can best employ his personal knowledge and judgment.

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Such intimations concerning the locus of decision making can help us to visualize the future organization of the Bureau, its geographic structure, and its professional career ladders.

VII

Seventh, I want to say something still further about the consequences of rapidly expanding knowledge. Some of the consequences, to be sure, are obvious. We acquire the means to develop computerized simulation models such as I mentioned. In general, it becomes possible to describe more things in terms of numbers, to make forecasts that are more reliable, and to achieve in some respects more rational decisions, more reasoned management. But at the same time some oddly contrasting results show up.

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Not long ago I revisited for the first time a research station where I myself had worked some fifteen years earlier. I was impressed by the knowledge of the resident research team concerning the conditions and behavior of the forest. They knew a great deal more than we had known when I was there. Evidently research had been paying off at compound interest. However, what impressed me even more was the great doubt that existed in the minds of the team about many facets of almost every question regarding their forest. When I was at that station, we thought that we were getting nicely on top of the job. Now, fifteen years and reams of knowledge later, the team was beginning to appreciate the extent of its ignorance.

Evidently society's store of knowledge is a mere blob in the universe of the knowable. The perimeter of this blob is manned, like a stockade, by defenders who are, at the same time, pushing their lines forward and outward. The greater their success, the more extended their lines of defense and the more gigantic the opposing arrays of the unknown.

Here, then, is the forecast that I come to on this point: The more swiftly our knowledge grows, the faster our ignorance, too, will increase. Paradoxically, the better we learn to foresee the future, the more overwhelming will become our uncertainty about the future.

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VIII

My eighth prediction, then, follows inevitably. If there is to be an uncertainty explosion, some powerfully effective armament against uncertainty is going to have to be brought up. And clearly the armament in question is something additional to knowledge--to science. I predict that for defense against uncertainty in resource management, we will lean more and more heavily upon faith.

IX

My ninth prediction concerns the steps that will be taken in forestry to make faith a more effective management tool. I foresee that we will earnestly review our tenets of faith: We will study the doctrine of multiple use, the doctrine of the necessity of wood, the doctrine of sustained yield, and all the many others on which we lean for support in our decision making. Our effort will be to enlarge the scope of our faith to match the growing scope of our questions about tomorrow. And our effort will be to keep our faith constantly under revision so that it will continue to reflect not only the best lessons from the past, but also the best dreams for the future.

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Here, of course, lies another paradox: that as change becomes more swift, we will be forced to seek refuge in institutions which are rooted in the past and thus are hostile to change. It is a paradox which we feel keenly in resource management. The forestry profession is self-conscious about its traditionalism in a world which so largely places its premiums upon what is new rather than upon what is old. I think the paradox will be, not only inescapable, but actually welcomed and cultivated in resource management, where the time-span of our interest is so very great.

Will it seem odd to open the BLM Manual and find a major section headed, "This Is What We Believe"? I think the section will be one of the most useful in the manual.

X

Prediction number ten: As our social and economic development progresses--and assuming, all the while, that we escape destructive catastrophes--the national energies will be turned to an increasing extent from the arts of production to the arts of consumption. There will be a cultural revolution. In the course of it, the national ethic which esteems work will be at least supplemented by another, which will exalt discriminating consumption and creative leisure. People's interests will turn to the quality, rather than the quantity, of living.

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Incidentally, I expect the members of the professional and managerial classes to do a great deal of thinking and talking about leisure, but to enjoy less than the average share of it. I foresee that their briefcases will have bulged to the point that two per person, one under each arm, will be the norm.

I foresee in the natural-resource field a good deal of effort being devoted to consumer education and related research. In formal education, the schools and colleges will develop courses in the intelligent and efficient use of goods and services. We can think of such courses as analogous to our studies of music and art appreciation. Extension programs will carry the same information and points of view to persons who are out of school. Research will be focused upon product design and methods of utilization and upon the design of living. The technology of consumption will come in for a share of the attention now lavished upon production technology.

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XI

Prediction number eleven: In the course of cultural revolution, the changes will continue, which are already under way, in the product mix from forest lands. The mix will shift in favor of watershed, wildlife, aesthetic, and recreational values. The change will take place at some expense of timber values, both on multiple-use lands and on limited-use lands. The latter will include the retired lands which have proved submarginal for the new silviculture.

XII

Twelfth, I forecast that forest land managers will adapt to cultural revolution by recognizing that the ultimate consumer is their customer, their problem, and the purpose of their work and by accepting the thought that their field is social science and not simply or primarily biological and physical science. The forest manager will, in the course of his education, be exposed to the social sciences, such as social psychology, anthropology, and economics. In the course of his career, he will be exposed as never before to the ultimate consumers of his products.

I might mention that I offer you this particular forecast free of charge. Those of you who know me for my biases toward social science had, no doubt, already forecast my forecast.

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XIII

Thirteenth and last, I predict that in the future, we shall have multiple-use land management, but not multiple-use land managers. I expect land managers to be single-use people by training and by at least much of their experience. Management will be performed largely as it is today: by the team of specialists captained by a former specialist. Surely the team members will have acquired, partly in school and partly on the job, an appreciation and a tolerance for the specialties other than their own. They will have learned about the biological and social systems of which the forest is a segment. Thus they will be able to see the forest and its management in entirety and in context. They will have an attachment for multiple use. And multiple use will be maintained as it is today: primarily an ideal and an abstraction.

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I recognize that the "land manager," the man of many parts, is an appealing answer to the problems of excessive functionalism such as fragmentation, poor communication, and failure to see the whole picture and the whole purpose. However, the land and its users are too complex a system, and the complexity is growing at too rapid a pace, for the system as a technical subject to be grasped by an individual. Indeed, the day for this did once exist, but now has gone by. The man trained from the outset as a generalist in resource management is apt to become simply a superficialist. The future holds more and more specialization, since it holds greater and greater knowledge. The land-management team of the future, and the forest-management team, will be notably larger than today.

Therefore I predict that we shall achieve the land manager of many parts in the same way that we shall reach our other technological achievements in tomorrow's complex world--that is, collectively.

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LANDS & MINERALS

by

Irving Senzel
Assistant Director

Multiple Use and the Single Tract

PPBS, Program Guides, Multiple Use principles are all essential to the scope and direction of forest management by the Bureau. They form the basis upon which individual decisions must rest. However, I do not think that these systems can be fully successful unless they incorporate the principle that each tract of land must be considered individually. General principles are not enough.

Each tract of land is unique. Each tree is unique. Geneticists predict that some day they will be able to duplicate individual living things exactly. I suspect, however, that two objects will never be able to occupy the same space. If nothing else does, location will make each tree and each tract of land unique.

This fact makes it necessary for us to consider each tract of land and each tree separately. This, of course, must be done within the framework of the systems we develop.

I want to discuss this notion from the point of view of land classification as it relates to forest management.

In the past, a main argument to hold on to timberlands was that we could manage them economically. We were forced to make this argument because many of the better producing tracts are isolated, and we were being pressed to dispose of the tracts because of their isolated status.

Economic management for timber production is no longer the controlling point, if it ever was. At least, it has not been the only point. In some cases, it is not the main point at all.

What is pertinent is the relationship of BLM timberlands to the economy and society around them. These are the society and the economy the lands are serving and will have to serve in the years to come.

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An example

One example may illustrate this idea. Along the West Coast of California we have about a dozen and a half isolated tracts of Redwood trees. These are not particularly prime stands and some may be very low grade. I don't know how we would make out if we had to decide their future on the basis of our ability to manage them as lumber-producing properties.

These tracts are now withdrawn for protection of their timber resources--the Redwoods. A district manager was willing to exchange one of the tracts to a lumber company for Point Reyes property. His conclusion was probably based on the manageability of the tract for timber production.

Chuck Stoddard took a trip out and looked at some of the tracts. This inspection gave him a few ideas. He felt that some of the tracts should be held as remnant Redwood tracts and managed or transferred to local communities for community parks. They would become increasingly valuable, he thought, as the surrounding lands were cut over. They would be the last remaining stands which would attract the people from miles around. Other lands he felt should be held in order to prevent cutting in areas of very erosible soils. On the other hand, he thought that a few tracts were not suitable for further protection and could be disposed of. Tentatively he concurred in a proposal to revoke the withdrawal as to some tracts and to add others.

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I did not concur. Instead, I recommended that all the tracts be put in protective-withdrawal status. My reasoning was this: If a brief inspection by the Director could bring up some previously overlooked factors, how could we be sure what to do without taking a good look at all the properties? I recommended that a specific plan be made for each of the tracts, taking into consideration all possible factors. Instead of partial revocation of the existing order, additional tracts were added and the necessary studies were requested.

In these studies, each tract will have to be considered in the light of its value to the surrounding economy and society. It won't be enough to look at total allowables, availability of markets, access requirements, cutting cycles, and other timber-production factors. Nor will it be enough to consider scenic strips, recreational enclaves, and other immediate site values by themselves. All these things will have to be looked at from the point of view both what is on the tracts and what is happening and likely to happen all around them. Then, and only then, will we be able to determine what is probably the best program for them.

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Another example

Our experience with our public-participation land-classification activities has emphasized (1) the fallibility of broad generalizations, and (2) the need to consider each tract individually. It supports the case of those who have objected to naming Type IV Areas as "Disposal Areas." We are finding considerable objection to disposal of isolated tracts in these and other areas. The main reason seems to be that these tracts in many places are the last segments of once vast public use areas. Here are often the only places where the general public can do its near-home informal outdoor recreation, picnicking, hiking, hunting, rock-hounding. They are the last of some people's open nature retreats. Each tract has its own special importance.

The Land Tenure Outlook

We discussed land tenure at some length at Coos Bay in 1963. Since then, the Classification and Multiple Use Act was passed and our classification program is well under way. We are now making retention classifications, a step in the direction of security of tenure which BLM foresters have yearned for.

Well, how dependable are retention classifications? How much can we rely on a retention classification for security of tenure? My answer: It is no more reliable and no more persuasive than the reasons you can bring forward whenever disposal of a classified tract is suggested. Those of you who have heard or read my remarks at Coos Bay can tell that my thinking has not progressed very far since those days. My main argument then was that public support of a program for the land was, in the long run, more important than the tenure arrangements that have been made. I still think that this is true.

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Land Classification and Forest Management

We have advanced far together in the last few years. We all recognize now that there is need for close cooperation between Lands personnel and Forestry personnel--that there is an important interrelationship between land classification and forest management. However, my discussion today really goes farther than that.

It states that the land-classification process requires us to look at each tract in the light of a great number of influences and considerations. It requires us to keep asking ourselves three questions. Should the land be retained in public ownership? If not, for what reasons? If so, for what reasons?

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If the decision is retention, it would seem to follow that we must prepare our management plans to realize the objectives involved in the reasons for retention. In short, land classification is not related to forest management; it is a part of forest management. A good forest manager must have lands expertise.

This does not mean that retention classifications or other tenure arrangements are a waste of time. Quite the contrary. If the right steps are taken in making the arrangements, they will be very effective. Properly arrived at, retention classifications will save everybody a lot of money, time, and effort. If soundly based, the community (meaning all interested people) will support its decision for retention. They will change their views only where there are very persuasive reasons for doing otherwise. They should be expected to change their position whenever there are good reasons for doing so. This is a primary principle of land classification. It reflects the dynamics of change, already emphasized by Associate Director Crow.

Let us approach a real case in a theoretical way. Let us assume that all the forested lands in Coos and Curry Counties, Oregon, had been classified for retention in 1960. Let us assume thereafter that Bill Sweet applied for a portion of the lands for a Point Reyes exchange. Let us also assume that the State of Oregon applied for another portion to satisfy its State selection rights. How would the retention classification have stood up against the two applications? I would guess that the Sweet application would have no influence on the classification while the State's application would have resulted in a reclassification of some of the lands; not the lands the State originally applied for. The applications would have been adjusted (as they actually were) to minimize their effect on the Bureau's management program. I assume this would have happened because there have been no real good reasons advanced to use these lands for Point Reyes exchanges and no real good reasons presented to deny the State's application (after adjustment). If this is true then the forces at play would have the same result whether or not the lands had been classified for retention. After all, the lands were covered by an application for withdrawal and that had no real influence on the results. No staff report was ever made on the application because convincing reasons were never advanced for "permanent forest production" in Federal ownership for all of the tracts.

Would a classification for retention have done any good in the actual controversy that followed Sweet's interest in Oregon lands? I think that it would have done a great deal of good. I think it would have brought the questions into the open from the beginning; it would have focused the matter on the relevant question of the proper classification of the land; it would have involved all the interested parties at once; and there would have been recognized procedures for handling

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the matter. After all, a main purpose of the classification procedures is to assure everybody how things will be done and that all will have a chance to be heard. That assurance was lacking in the Sweet affair and contributed to its unhappy consequences.

Let's look at this question of tenure in a novel way. Let us suppose that BLM had no forested lands in Oregon. To get timberlands for its State selection rights, the State would have to get a piece of national forest lands. Under the circumstances, could the State succeed in getting a piece of the national forest holdings? The chances are good that it could. It has happened before. In other words, whenever there are persuasive reasons therefor, even a national forest withdrawal may not suffice to hold lands in Federal ownership.

I believe that the best tenure arrangement for BLM forest lands is good forest management. This should give as much security of tenure as is possible. Full security is not possible. Forests are living environments. Society around them is dynamic and ever-changing. Management must respond to the changes.

The Future of the Classification and Multiple Use Act?

At the present time, the odds seem to be against extension of the Act. Support of the Act is now coming from segments of the public which do not forcefully exert themselves politically on individual public questions.

1. Support is now being given by the local public and local users who have had the opportunity to relate their individual and group interests in the provisions of the Act.

2. Support is also coming from State and local government agencies and land managers who have the opportunity to relate the benefits to their own programs of classification activities under the Classification and Multiple Use Act and the Recreation and Public Purposes Act.

Lukewarm or qualified support is coming from segments of the public which otherwise might be expected to give vigorous support to conservation legislation.

1. Federal conservation agencies are held back in part by their own propensities to eye the public lands as a grab bag for their programs.

2. National conservation groups do not seem to be certain what to do. There is a feeling that support will generate disposals of public lands which they oppose except for limited purposes, such as urban expansion.

Antagonism to the Act is coming from the traditionalists and from those who do not wish to antagonize the traditionalists.

Most everybody else is indifferent, ill-informed, or disinterested. Extension of the Act will require some widespread appreciation of the values of the public lands and the values of the principles and procedures established by, or developed under, the Act.

Principles and Directions

We have to be constantly alert to be able to gauge the expected course of our land and minerals program. We have to study the implications of Presidential messages, Bureau of Budget Circulars, Secretary's regulations and instructions, speeches, and what not. We try to keep everyone advised of our conclusions--in instruction memos, manuals, and speeches.

I'll mention some of the principles and directions which will probably command increasing attention in lands and minerals in the immediate future:

1. Full monetary return for services rendered or property rights transferred.

   Our pricing systems are being scrutinized by the Bureau of the Budget and others. We are also being asked whether the way we are doing things is designed to bring in adequate returns. We will have to continue to examine our pricing methods and disposal systems.

2. Maximum economy in operations.

   Costs of doing business are high, and manpower is scarce. This will continue to be a problem and we will have to search out ways to cut costs.

3. Public participation in decision making.

   The day of the backroom decision, to the extent it ever existed, seems to be gone for good. The suspicion of backdoor dealing, even where it doesn't exist, we know, can move people.

4. Protection of the natural environment.

   Save what is left and restore what you can. This is going to be a demand of more imperative insistence. The latest but not least of the resources to be emphasized is natural beauty.

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5. Intergovernmental cooperation.

Possibly the greatest benefit we will realize from the Classification and Multiple Use Act is the excellent focus it has provided for intergovernmental cooperation and public participation in decision making.

6. No hiding place.

Not so long ago we dealt with each individual who came before us without anybody else paying much attention. Now practically everything done is in a goldfish bowl environment. There is hardly a place that is so isolated that it is free from onlookers. A county asks the district manager about the possibility of a dump site, and almost before we can hang up the phone the Secretary has two protest petitions. A little businessman puts up a sign in trespass and the Beautification Committee knocks on our door. We must become fully sensitive to possible reactions to any and all proposals.

Expected Events

We have to realize fully that we are not independent agents. Powerful forces are at work which help determine what we will do and how we will do it. These forces seem to be pointing to the following trends for public lands and minerals activities.

1. Increased mining activity on the public lands.

This will include all types of minerals, leasables, locatables, and salables. Stimulating this are many things: The Department's heavy metals program, the possibilities of mine-mouth power, residential construction in the attractive environments of the West, extensions of the improved highway system into every nook and corner of the land, unexpected growth of nuclear power, and other increased needs for minerals. The new needs and the new potentials will increase speculation in mineral rights - speculative mining locations and trading in assignments. Accelerated mining will intensify the need and demand for measures to protect other resources from unnecessary damage and for measures to restore what is reasonably susceptible of restoration. These forces will bring BLM into a more active role in management of mineral leasing and mineral sales for better protection of surface and water values. They are likely also to keep attention on the mining laws and their impact on

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other resources. It is not unlikely that we will be asked to take steps to minimize resource damages from activities under the mining laws.

2. Greater attention to managed disposal of lands.

During the last part of the 1950's our disposal activities were centered about an effort to keep up with an increasing flood of applications, to a large extent stimulated by promoters. In the early 1960's, the effort was (a) to reduce the backlog resulting from earlier failure to get ahead of the flow and (b) to design systems to permit the public business to proceed in an orderly, businesslike way. We succeeded quite well at this. We then took stock of the situation with our master unit studies, our initial analysis, and our programs under the Classification and Multiple Use Act. We coupled with this a move in the direction of a disposal program designed for positive accomplishments, such as satisfaction of the States' selection rights, getting into production the remaining agricultural lands of the public domain (primarily in Nevada and Idaho), satisfaction of scrip, transfers of public purpose lands under the Recreation and Public Purposes Act. Accomplishments here are promising. Other aspects we would like to emphasize are building inventories of excess lands for use to acquire lands for parks and recreation areas and other Federal projects; sales of urban, commercial, and industrial lands; and disposal of tag ends. In quantities, our record of the past few years compares well with the rest of the period after World War II (a period of rapid national growth) and has been accomplished with relatively little controversy. This is largely due to the emphasis we have placed on public knowledge and participation. We are hopeful that our activities under the Classification and Multiple Use Act will produce sufficient public knowledge of our programs and confidence in our activities that we will be able to carry on desirable disposal programs efficiently and with the consent of the people. To do this, we must keep disposals of land acceptable to the general public by relating them to specific, well-defined goals and by preventing adverse impacts on important public values. Careful management of disposals is essential.

3. Increased tempo of anti-trespass activity.

Increasing use of the public lands, based in large measure on rapidly growing awareness of their existence and better accessibility, is bringing an end to old informalities. BLM will have to give increasing attention to termination of

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existing trespass, prevention of further trespass, and reasonable rules for the use of the public lands. Billboards are coming down by the hundreds and many more are doomed. The extent of occupancy trespass is being inventoried and the costs of termination added up. A few years ago the Secretary asked us to take vigorous action to prevent further trespass. He also asked us to terminate existing trespass, taking into consideration what is fair and equitable and the public interest in each case. We have made a good start but much is yet to be done. It has to be done as soon as possible.

4. Acceleration of local planning and local programs.

We have no indications that comprehensive zoning will be embraced in the near future in the public land areas. However, public planning seems likely to continue to grow rapidly. This movement is being stimulated by Federal programs encouraging or requiring planning. However, it could not get very far if local opinion did not agree that planning is essential. Planning is required by and leads to community development programs--parks, roads, waterworks, disposal grounds, etc. Planning and programming have important effects on BLM. They create new demands for lands, some of which can be satisfied from the public domain. They also cause local governments to be concerned with our disposal activities. We will continue to cooperate closely with local planners and local planning.

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5. Greater attention to economics and values.

More and more we are beset with demands to justify what we are doing. At one time we could feel quite secure if we just followed our regulations. Now we have to show in addition that the price is right, that the methods are effective, and the decisions sound. Methods of bidding are being questioned and will have to be looked into very carefully. In disposal of resources, we will have to look carefully into the nature of each competitive situation to set our minimum bids, methods and extent of advertising, and terms and conditions of sale. Competition for resources and for use of lands will require allocation decisions to be made on more well-considered basis than ever before. We'll have to analyze carefully the effects of conservation provisions on the price or rent we ask. If we are going to require conservation and rehabilitation measures, we'll have to adjust prices accordingly. Public policies demand elimination of windfalls. They likewise demand prevention of unfair burdens.

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6. Fuller public participation.

It appears likely that public participation in lands and minerals matters will be invoked more and more in individual transactions, as well as for the larger questions. Continuity of participation and interest will make the process increasingly more effective. We ventured far into public participation in recent years because traditional methods were leading more and more to frustration. Retreat could only lead to return to an atmosphere of suspicion and protest. We would like to further develop a system that will enable everyone to feel that he knows what is going on or at least that he knows the way to find out. That should help us carry out the public business more speedily and properly.

The National Forests

Many of the pressures on public lands seem to be pressing on the National Forests, too. The Forest Service seems to be trying to contain disposal forces by insisting on quid pro quo. Usually this means an exchange. It will be interesting to see how well the Forest Service will hold the line and its present policies under these pressures. In any event, it is probably true that from now on all forest managers must become expert in land classification and mineral management, as we are trying to practice them in BLM. To that extent, we are ahead of the game.

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RECREATION

by

Eldon F. Holmes
Chief, Recreation Staff

Part I

Recreation Use of Forest Lands

In speaking to you as managers of forest lands, I feel that I am speaking to the people who manage the core of BLM lands that most Americans think of when they first think of outdoor recreation - *woods and water*. Recreation use of desert and rangeland environments - *open space if you will* - is a new concept which is just catching on with administrators and recreationists alike - and the idea of vacations of this type is still a relative newcomer for most people. Even though forests make up a minority of BLM lands in the States outside of Alaska, we feel that these lands are the heart of a successful Bureau-wide recreation program. Forest areas of BLM may not ultimately - or even now - provide the most recreation - but they are generating some of the initial public support which we need.

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The forested areas of the O&C lands gave the first impetus to the Bureau Recreation Program and have - in a real sense - set the stage for outdoor recreation in open space. Recreation sites were first developed on O&C lands in 1960. Of the 151 recreation sites that BLM administers - 60, or approximately 40% of the total, are in Oregon, predominantly in forested areas. Even though this development came from funds returned to BLM from the sale of O&C timber - an advantage other areas did not have - the natural advantages of woods and water lent the basic appeal that generated the demand. So, I am saying that our *foundation* in recreation lies in the lands for which you have the primary responsibility. This does not, however, relieve us from *our* responsibility to be original and creative and to grow in developing recreation in other types of natural environments. If we are to achieve our goals, we must begin to plan and manage the recreation resource, along with the management and utilization of the timber, wildlife, water and forage resources. Outdoor recreation has not been an integral part of BLM management programs; and therefore has not

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been able to meet the growing problems in public domain recreation with any degree of effectiveness. We cannot develop a recreation program which is a by-product of other management objectives.

We must begin now to plan for utilization of the recreation resource as one of the objectives in the Bureau's multiple use programs. For example, access roads which once had the sole objective of getting the timber out in the most economically efficient means must now be looked at in a different light. By increasing road haulage distance in some cases we may provide an opportunity to view some outstanding scenery - or we may provide access to some outstanding recreation sites. Also, we may develop roads in which timber values are subordinate to recreation values and objectives. However, underlying all road construction and timber harvest decisions must be a consideration of the aesthetic impact on the environment.

Determination of Relative Recreation Values

The first basic step toward incorporation of recreation management decisions into the management of forest lands has been taken in the Unit Resource Analysis Handbook. The recreation portion of the handbook provides guidelines for the evaluation of recreation values and - a guidance for the analysis of the present recreation situation on forested lands. You are also given an opportunity in the Unit Analysis Handbook to project into the future some management assumptions on opportunities for recreation. You will undoubtedly underestimate your opportunities for development and predictions of anticipated recreation demand - but this problem is not unique to BLM - even the most sophisticated recreation management agencies have problems in this area.

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Where forest land values for timber management purposes are measured in stumpage, site classes, and tree species, recreation values are measured in terms of use, demand and land use capability. These include both tangible and intangible values such as vegetative types, water, geologic features, fish and wildlife resources, historic and archeologic events, and climatic considerations. Many of the factors I've mentioned - climate - soil and topography, for example - have a direct effect upon your forestry practices - but in most cases you cannot use or overcome the limitations of these factors as effectively in forestry as you can in recreation.

For example, you can construct recreation sites at various elevations to take advantage of cooler high elevations in the summer or the lower elevations for early spring or late fall use. You can develop recreation sites on various soil types by adapting recreation construction and the sanitary facilities to the site. Where topography might limit forestry practices - it can be used advantageously in recreation management to limit motorized use of wilderness or other primitive values we may wish to protect.

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Identification of the recreation values for which forest lands are best suited is accomplished under the recreation land classification system developed by the Outdoor Recreation Resources Review Commission. This system has been adopted by the Bureau of Outdoor Recreation - and is now the official system in use by all Federal agencies, and many state and county agencies.

The classification system is based largely on physical features - but economic and social considerations also play an important part in deciding on the class designation of any given area. The system is especially useful in the unit analysis process since it provides a framework for the development of management decisions and practices for all types of outdoor recreation situations. We will be showing some slides that illustrate the six types in the classification system from Intensive Use Class I through Class VI Historic & Cultural Sites. They will illustrate the importance of the development factor in the first three classes, compared to the natural factors limiting classes IV to VI.

Recreation Use and Timber Production Relationships

The question of classification of land for recreation purposes always brings up the question of the effects of such management on timber resources - or the effects of timber production on recreation in a multiple use program. I could bore you with many figures on this subject, based on research of the National Forest Service.

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The essential result of one significant research study indicates that some forests can supply ten times the amount of recreation use they currently produce with a very slight reduction in timber production. A study of three California National Forests totaling over 3,500,000 acres showed a possible tenfold increase in recreation with a sustained yield reduction from 276 million board feet to 240 million, or 13 percent. Several other studies show that recreation and timber production are basically compatible.

For example, a study by the Outdoor Recreation Resources Review Commission of 1,274 areas - national, state, and local - indicated that timber harvest - in the great majority of cases - actually improved recreation. In less than seven percent of the cases, and these mostly local, was timber harvest considered a limitation on recreation.

In additional Forest Service research on the three California National Forests, it was concluded that capital, and not available land or reduction in timber production, may be the limiting factor in future recreation developments. They found that for every dollar's worth of reduced timber production, an estimated $25 worth of new capital must be invested to improve camp and picnic areas. They also stated that

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many opportunities for increased efficiency of capital expenditures in recreation and timber production could be realized with multiple use management.

Forest Service research in the Boundary Waters canoe area showed that over 80 percent of the recreationists there were not aware of timber operations - another 13 percent noticed it but were not bothered, while about 5 percent were bothered. Research would indicate at this point that only a small minority of lumbermen and recreationists feel that the two are incompatible.

Trends in Outdoor Recreation Management

All indices of outdoor recreation demand indicate that the tremendous upsurge of persons seeking outdoor recreation experiences will continue. In order to cope with these ever-increasing numbers of people, Congress, in Public Law 88-29 of 1963, stated the following:

> "That the Congress finds and declares it is desirable that all American people of present and future generations be assured of adequate outdoor recreation resources, and that it is desirable for all levels of government and private interests to take prompt and coordinated action to the extent practicable without diminishing or affecting their respective powers and functions to conserve, develop, and utilize such resources for the benefit and enjoyment of the American people."

In the implementation of this law, the President's Recreation Advisory Council was set up. This Council immediately set out to implement the objectives of the law. Between March 1963 and October 1965 they came out with seven policy and guideline circulars. The first of these set up guidelines for national recreation areas - a new idea; the second set up general policies for a nationwide recreation plan; the third spelled out policy on water pollution in relation to public health and recreation; the fourth called attention to the need for scenic roads and parkways to fill the demand for pleasure driving; the fifth set up priorities for Federal investments in outdoor recreation; the sixth provided for a uniform system of measuring, recording and reporting of recreation use by Federal agencies, and the seventh stated the criteria which would govern non-Federal assumption and management of recreational facilities on Federal lands and waters. One policy circular which is not yet issued deals with conditions for the assignment of Federal agency administration of recreation resources.

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These seven circulars have been the primary guidelines for all Federal agencies involved in recreation. The Director indicated to you in his opening remarks that we must quantify the outputs of our programs and show the public benefits which we are realizing. The seven circulars of the Advisory Council are basic aids to this. Such things as the definition of a patron hour and a visitor day have been standardized. Techniques and methodology for collection of use statistics are being standardized - strong guides are being established for capital investments - and non-Federal interests are being urged to carry a heavy part of the financial load.

The initiation of recreation fees under the Land and Water Conservation Fund Act has also created some new trends in recreation management which will have some impacts on your programs. First - the monies collected from entrance fees and the sale of the Golden Eagle passport have not lived up to anticipated receipts. As a result, BOR is looking to more widespread application of user fees for added revenue. These fees are charged in addition to entrance fees - or entrance with the Golden Eagle - for extra services which are provided in a recreation site. We anticipate that we will be asked - next year - to make user fee charges on a uniform basis for such uses as overnight camping - firewood - and other special services - in addition to the user fee services listed in the regulations.

The second trend in recreation site management which is being brought about by recreation fees is in the area of site design, location, and administration. It is doubtful whether we can justify the construction of new recreation sites on which fees will not be charged. Therefore, we must design our sites for economical fee collection. To make this feasible, we will generally have to design sites which can accommodate many people. Usually a minimum of 20 units are required for economical fee collection. Site locations will have to be considered on the basis of travel distances as well as attractiveness. This may lead to the development of groups of sites in a general area in order to reduce the burden of fee collection and increase revenue.

Another trend which is getting attention is the possibility of using more concessioner-operated sites to reduce direct Federal spending for outdoor recreation facilities. BLM currently has only limited authority for entering into concessioner contracts at this time. Legislation is needed to extend our authority in this field.

On the question of who should pay for recreation, it appears that the developments are moving in the direction of more Government subsidization - with the user paying an extra share of the cost in addition to what he pays as a taxpayer. The problem of evaluating the benefits of outdoor recreation is still being subjected to research - and this is a tough one! The justification for subsidizing it, of course, is the assumed social benefit resulting. A dozen Federal laws of the 20th century have emphasized this.

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The high rate of urbanization of the last two decades tells us where the people are going to be. It brings into real sharp focus the role of those land management agencies having recreation or open space lands near metropolitan centers - particularly if within two hours driving time - because this is where the emphasis is likely to be. Desert recreation is becoming significantly more important, and those agencies having such values will be embarking on a whole new concept of recreation development and management.

The "wheeled camping" of today makes the radii from the cities longer and longer and will always demand a certain amount of farflung recreation development, whether deep in the Rocky Mountain States or in Alaska. However, it is significant to note that the trend is heavy to day-use areas as opposed to overnight camping. Overnight camping is undergoing change - people want showers at night - they want the amenities - and now we find that folks over 40 prefer not to tent camp.

The establishment of a "rotation age" or "rest rotation system" for recreation sites, buffer zones, and scenic corridors is inevitable. We cannot succeed in retaining over-age trees indefinitely in order to preserve recreation sites.

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Since trees are the dominant feature of the recreation areas involved in forest land recreation and since they are living, ever-changing plants - plans and controls must be designed to keep the forest in tune with the man-modified natural processes involved. This will require the adoption of silvicultural systems, management practices and operating restrictions which will most nearly satisfy the needs of both timber and recreation use. In both cases the essential requirement is that continued tree production be assured.

It is likely that reproduction through selection cutting will have little application on most BLM forest types. However, in limited intensive use areas where selection cutting may be desirable, continued stocking of the site may have to be accomplished through planting programs. This would have the effect of forming an all-age stand in areas of high capital recreation investment with little or no loss of recreation use of the improvements. In making extensive areas of intensive use and intimate observation zones, group selection cutting may be the best choice. With the exercise of care in their application, other clearcutting practices may be appropriate in most areas of extensive human use and more distant non-intimate observation zones.

Regardless of the silvicultural treatments, management practices or operating restrictions in managing our forests in intensive use recreation sites and buffer zones - or in intimate observation areas such as scenic corridors - the management goal in most cases will be to perpetuate the forest. There may be some losses in "timber" production per se, but these are offset in whole or in part by perpetuating recreation values. As was pointed out earlier in the Forest Service studies, $25 worth of new capital must be invested

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to improve camp and picnic areas for every dollar's worth of reduced (or harvested) timber production in recreation sites. Therefore, if we maintain timber stands on recreation sites we are utilizing the higher capital investments in recreation sites over longer periods of time.

Now, let's take a look at some slides which illustrate some of the concepts and trends we have been talking about. First, we will look at the application of the BOR Recreation Land Classes to specific recreation resources - then we'll examine some of the principles and applications of the recreation fee system - and finally, will examine some slides which illustrate some aspects of recreation construction in terms of design, planning, opportunities and management principles.

Part II

Slide Presentation

(Part II is a slide presentation narrated by Delmar Price. Emphasized were desirable and undesirable types of layout, planning, construction, and maintenance of recreational sites.)

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Part III

Present Situation and Future Outlook

What is our present situation and future outlook?

First, some facts:

Most of the BLM lands are located in the Pacific, Mountain, and Alaska census regions. The total population levels forecast for these census regions indicates 5.6 million additional people in 1973 over the level of 1965. These new people will add to the demand for outdoor recreation in the West an estimated 126.4 million total visitor days annually by 1973. This includes some 25.6 million days of intensive use type recreation.

There are 4,300 potential recreation sites and areas already identified on BLM lands - and - it is estimated that 1,000 additional sites will be identified by 1973. Development of 136 of these sites could accommodate an additional 9.3 million visitor days of intensive recreation use

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annually by 1973. However, our objectives are to attain a one-time use capacity of 69,400 people which can provide intensive use facilities for an estimated 11.6 million visitor days annually by 1973. What portion of this use capacity will have to be in the forested areas of BLM lands is not known.

It is estimated that -

by 1973, the demand for hunting in the West will have increased to 38 million visitor days annually. The public land wildlife habitat upon which 2.7 million big game animals and innumerable small game animals and birds are dependent can provide, with the improvement of 2 million acres of habitat, some 9 million visitor days of hunting by 1973.

We are confident that a minimum 15 million acres of public lands can be made available to increased numbers of recreationists by constructing roads and trails and erecting directional signs. An unknown number of archeological sites need identification, and it is conservatively estimated that a minimum of 500 will require protection and interpretation.

Our Present Situation

What I have just stated indicates - in part - the job in front of us. How we provide an estimated 11.6 million visitor days intensive recreation use and 9 million visitor days of hunting by 1973 will largely depend upon the emphasis given to these activities in the months to come; however, recreation management can never be completely divorced from the management of the public lands for other resource purposes. Management of lands for outdoor recreation is in fact dependent on, and must be an integral part of, all multiple use management decisions. The outdoor recreation subactivity has in the past, as I have previously said, not been an integral part of BLM resource management programs, and, therefore, has not been able to meet the growing problems in public domain recreation with any degree of effectiveness. However, during the next few years the Bureau's outdoor recreation program is expected to pass from a passive role to an active program in the Bureau's total multiple use management responsibilities. In the long-term view of the Bureau's management programs, it is anticipated that outdoor recreation will emerge as one of the major resource management programs on the public lands.

Moving from a passive role to an active role is not without frustrations and problems - both at the field and Washington levels.

Our situation today is very similar, indeed, to the process of "growing up" and "going out on our own."

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But, fundamental to our whole situation is that our first inventory is done - analysis and evaluations are underway - and - now our goals and objectives have taken shape.

In order to develop the recreation program as one of BLM's major resource responsibilities and maximize beneficial returns to society over time - we will retain under BLM administration and management those recreation resources which can be effectively developed as an integral part of the Bureau's land management and utilization programs as provided in the Classification and Multiple Use Act.

Where BLM recreation resources are not an integral part of BLM land management and utilization programs, we will transfer the administrative or management responsibilities to state or local governments for recreation developments which will meet public needs. Such transfers generally will be accomplished under the R&PP Act, or in some cases through concessioner contracts - or other means.

The proper application of the Classification and Multiple Use and R&PP Acts will help us to meet the primary objective of the Bureau's recreation program of responding to public needs - Federal policy and national goals.

The Future

Basic to our program of the future is the implementation of two paralleling courses of action - The preservation and protection of the Environment - Environmental Aesthetics, if you will, and the development and management of outdoor recreation opportunities.

Environmental Aesthetics

Full emphasis will be directed under Environmental Aesthetics toward the preservation, protection and enhancement of recreation values and natural beauty. All program efforts will apply open space and aesthetic considerations to preserve or improve the natural beauty of land and water resources. In general we will:

.....Consider and preserve natural beauty values in all resource development and improvement efforts.

.....Give full consideration to outdoor recreation and open space values in every land management decision.

.....Clean up, restore or rehabilitate the public lands where feasible and practical, seeking to protect public health and the natural resources.

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.....Preserve and protect open space areas having values that are fragile and subject to deterioration from public use.

Specifically as related to forest values under this emphasis, we will endeavor to:

.....Emphasize preservation and protection of scenic zones, buffer strips and corridors adjacent to trails, roads, streams, and bodies of water - and -

.....Emphasize identification, preservation and protection of areas having wilderness, natural and historical values.

Outdoor Recreation

In order to meet that share of the national outdoor recreation need which occurs in the West - whether it be forest or open space - it will be our objective to provide the maximum of recreation opportunities for public use and enjoyment.

(Extensive)

We will achieve this objective in part by increasing opportunities for extensive forms of outdoor recreation use - such as hiking, rockhounding, sightseeing, nature study and similar activities. These opportunities will be provided by a recreation program designed to: (a) Identify and protect areas which have primary wilderness values, (b) Increase public access and seek to control off-highway vehicle use, (c) Increase signing efforts on BLM lands for public relations and identification purposes, (d) Develop and maintain nature trails and hiking trails, and (e) Provide primitive recreation sites with minimum sanitation facilities for hunters, fishermen, hikers, and other extensive use-oriented recreationists.

(Intensive)

In addition to extensive recreation facilities the Bureau will develop facilities for intensive recreation use such as camping, picnicking, boating, and related activities. In intensive use areas we will develop quality recreation facilities near metropolitan areas where public demands are not being met.

Highest priority will be placed on the development of recreation opportunities on areas of national and regional significance - and - in regions of recreation shortage where public recreation demands are not being met by other means. Oregon - particularly in the O&C areas - has already given special attention to these considerations when making capital investments in developments.

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Full achievement of our objectives for provision of the maximum contribution of outdoor recreation opportunities, however, must be within a framework of reasonable and practical goals and objectives. These, in our judgment, should include the following:

1. A continuing identification, inventory and assessment of recreation values.
2. The proper, timely and orderly utilization of the outdoor recreation resource (Planning).
3. The maintenance of a responsive level of outdoor recreation development and management.
4. The provision for and maintenance of an adequate data base (recreation use and demand).
5. The provision for and maintenance of an effective level of communication and educational services (Interpretation - Information).
6. The achievement and maintenance of an effective level of participation and cooperation with groups, organizations and agencies concerned with outdoor recreation. (working with others)
7. The achievement and maintenance of an effective level of outdoor recreation effort from the Washington office to the field. (Training, staffing, and building stature).

Within the framework of what I call goals, that you have been exposed to, I would like to target for a few moments on certain specific objectives that are fast becoming program elements.

First - Comprehensive Outdoor Recreation Planning

It is quite apparent from trends - patterns and Federal policy that have become established - that we can no longer follow the "hit and miss" approach to developments on BLM lands. There will have to be a proper order and continuity in making available outdoor recreation opportunities. Our major emphasis thus must be in planning for the development of resources and the preservation of open space values under multiple use principles. It will be necessary to establish priority areas for planning. Planning priorities and program budgets will favor lands characterized by heavy use, lands in areas of recreation shortage, areas near metropolitan centers, and where the resource values must be protected. Likewise, comprehensive planning

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preferences should be given to areas where outdoor recreation values are recognized as the primary resource value. These areas will include Recreation Lands, Scenic Rivers, Wilderness, segments of the National Trails systems, and areas generally accepted as of regional or national significance.

The second specific element of concern to us is how we develop and manage the recreation opportunities we have. It is becoming increasingly clear that we will be compelled to concentrate major recreation facility development and capital investments on areas of national or regional significance within 2 hours driving time of major population centers. Similarly, we must provide for the management and improvement of the productive capacity of wildlife habitat, for small game in those areas within one hour's driving distance of population centers, and to improve the productive capacity of wildlife habitat for big game in those areas over two hours' driving distance from population centers. This is because more recreation days can be accommodated on small game habitat than on big game habitat and people will go further to hunt big game than small game.

Emphasis will have to be given to the development of facilities of sufficient quality and size to meet the criteria for designation of sites for fee collection under the Land & Water Conservation Fund Act. This includes, of course, location of facility developments in areas administratively convenient for visitor control and for site maintenance.

Third

Of equal importance, by necessity, is the development of reliable data on use of BLM lands for recreation purposes. Not only are we required under the Land and Water Conservation Fund Act to provide reliable data, but increasingly will we be required to justify capital expenditures on developments in terms of use and demand. Techniques and methodology are now being developed for measurement of current recreation use and making estimates of future demand. Procedures for evaluation of recreation benefits are also being developed. Our basic objective at this very point in time is the quantification of use through statistical methods of acceptable validity.

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Fourth - Communication and Education

Our completed recreation inventory reflects an almost unbelievable number of opportunities of special significance to the public which, if properly interpreted, would better help people appreciate and care for these values. This necessitates the gradual intensification of our interpretive program in conjunction with facility developments to provide a full understanding of the resources or features being interpreted.

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Fifth - Cooperation and Coordination

Each day at the Washington level - and I am sure this is true in the field - we are finding ourselves becoming more completely immersed in responses to requests for recreation information on BLM lands. The heavy increase during the past year has been due largely to the expanded role of the Bureau of Outdoor Recreation as it seeks to better coordinate the recreation efforts of all Federal agencies in the provision for increased opportunities. It has been costly in time and effort. Out of our technical staff of three people in Washington, one man devotes almost full time in cooperative activities with BOR. Our agency is beginning to be recognized as a force in recreation - and - our identity and role has increased significantly during the past year as results of these efforts.

We are moving into position - and - as I see it, there are four ways we can continue to improve upon our present position.

1. Coordinate and participate in joint studies, planning, and in other recreation endeavors of joint interest, particularly on a state and national level.
2. Cooperate with other Federal agencies in providing data on recreation use on BLM-administered lands. Information will be provided annually and will progressively be improved as techniques are developed to accomplish data procurement.
3. Utilize wherever possible the experience and expertise of those agencies to accomplish our program goals, also to provide information as requested, and seek to facilitate total Federal efforts in outdoor recreation.
4. Coordinate with other units of government in the identification and evaluation of recreation opportunities on the public lands in order to fulfill the ongoing needs of the Nationwide Outdoor Recreation Plan.

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The sixth and last point I would like to make deals with achieving and maintaining a high level of outdoor recreation effort.

We need stature in recreation - both inside and out. This can only be achieved through development of expertise - clear-cut goals and objectives - and a full assumption of recreation responsibilities at all levels of the Bureau. I feel strongly that we must:

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Emphasize staffing of professional personnel having training in outdoor recreation management and related disciplines, in districts having high recreation values.

Provide at Washington level the necessary policy guidance, program goals, objectives and program emphasis.

Seek to raise the standards of recreation endeavor through regular training conferences, guidance techniques and new methods of accomplishment of program goals.

Place recreation responsibilities at district level for outdoor recreation inventory, planning, development, management and maintenance.

In conclusion

I would like to say that BLM is in the outdoor recreation business in a big way - whether we like it or not. We have been put there by mandates of Congress and actions of the Secretary.

It is unfortunate that we don't have all the tools to make our program as effective as we want - but these are coming.

We are in somewhat the same position as the Forest Service was some 20 years ago - lacking expertise, staffing, budgets and good information on use being made of the lands. However, they weathered the storm.

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In the brief time I have had today I have pointed out some basic considerations for getting our own house in order to meet the challenges ahead.

It is clear that we must begin to plan for the utilization of the recreation resource as one of the major Bureau multiple use programs in order to be responsive to the increased public demand and Federal policy.

We found that outdoor recreation and timber production are basically compatible and that many opportunities for increased efficiency in capital expenditures in recreation and timber production are possible under multiple use - and - regardless of silvicultural treatments to provide for recreation opportunities - we will perpetuate the forests. The increased demand for outdoor recreation will have its impacts on forest lands just as it will on the open spaces - We will see the emphasis on developments in areas of greatest need and regions of shortage.

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We will increasingly be required to justify capital expenditures in recreation developments in terms of demand and the public benefits to be derived.

We will be required to develop sites upon which fee charges may be made in an endeavor to get the using public to carry part of the financial load.

We must recognize with the strong encouragement being given to the non-Federal interests through "grants in aid" and other means - that more and more coordinated effort will be required with these interests - and more and more will these interests covet the choice BLM sites which we haven't gotten to yet.

Finally

We need stature - both inside and out - we can achieve this only through development of expertise--the establishment of clear-cut goals and objectives and a full assumption of recreation responsibilities at all levels of the Bureau.

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WILDLIFE

by

Robert (Bob) Smith
Chief, Wildlife Staff

It seems appropriate at this conference on "Man and the Forest" to open my remarks with a quotation by the late Adlai Stevenson. "We travel together," he said, "passengers on a little space ship, dependent on its vulnerable reserves of air and soil; all committed for our safety to its security and peace; preserved from annihilation only by the care, the work, and I will say, the love we give our fragile craft."

During the span of time that man has been on the planet, the average length of time for a doubling of the population has been on the order of 50,000 years. At the present time, this doubling period has been reduced to about 35 years. By 2000 A.D. the United States will have 300 million people, needing a third more food and twice as much water as today. Housing will have to be provided for 100 million more people, roads for three times as many autos, and space found to bury an additional 100 million tons of solid waste. We do not, we cannot truly comprehend the impact of all this on natural resources.

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Multiple Use

We in the Bureau of Land Management are extremely fortunate to have, as the principle under which we operate, the most significant and generally employed concept relating to land husbandry. I refer to the principle of multiple use. It is defined as the management of the various surface and subsurface resources so that they are utilized in the combination that will best meet the present and future needs of the American people; management wherein consideration is being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output.

Since wildlife is commonly a secondary economic value in land use, its status and utilization as a land and water product depend on effective multiple use policies. How such policies are implemented in different economic situations must be understood in determining appropriate investments and expected returns from the wildlife resource.

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Land managers are no longer just foresters, range managers or wildlife managers. While expertise in specific areas will be continued and refined, a basic change is taking place in the philosophy of these individuals. Competition is recognized, with compatibility the goal. Under multiple use management, each single use seldom can attain its maximum production; rather, the objective is an optimum production of several uses in combination.

As modern ecologists, we must accept man as a part of the ecosystem. The goal of land management must be determination of how man may co-exist and be benefited.

Spurr, in his book "Forest Ecology," stated that the forest community consists of an assemblage of plants and animals living in an environment of air, soil, and water. Each of these organisms is interrelated either directly or indirectly with virtually every organism in the community. In other words, the plants, the animals, and the environment--including the air, the soil and the water--constitute a complex ecological system in which each factor and each individual is conditioned by, and in itself conditions, the other factors comprising the complex. As land managers we recognize these interactions. As we manipulate plant and animal relationships, our decisions will affect not only how much different consumers get, but also the characteristics of the outputs they receive.

Demands for fish and game

We all know that forests are extremely important, not only for timber and watershed products, but also for the production of fish and game. They are preferred by sportsmen as the ideal environment in which to pursue their quarry, and by campers, picnickers and hikers as the best place in which to see wildlife. If you think about hunting or fishing, the visual image that flashes through your mind will almost always be that of a forested area.

Significantly, from the standpoint of the management of wildlife as a recreational resource, nearly half of the forested area of the country is in public ownership.

There is little doubt but that sport and commercial demands for fish and wildlife far exceed the supply. Because of this and for the protection of the basic resource, they are rationed through necessarily restrictive seasons and bag limits.

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Nationally, hunting and fishing are growing at the rate of 1.7 percent annually, and in the West, where the population growth exceeds the national average, the rate is even greater--on the order of twice the national average, I believe. Although about one-fourth of the land area in the West is managed by the BLM, only about one-third of these lands is significant in the production of wildlife. Undoubtedly our forest lands, although only a small part of the total, provide a significant portion of this amount.

Wildlife habitat objectives

Cowan defines management as an activity of man. It is any planned and purposeful action directed toward altering the environmental impact on an ecotype or on an animal population. It includes the regulation of the direct or indirect impact of man himself in the ecotype or on a wild species, as well as all attempts to influence such other features of the environment as nesting sites, shelter, food, parasites, disease, predation, competition, or distribution.

In general terms, our management efforts are directed to encourage those species we desire to assist, to reduce populations of creatures we consider damaging to our interests, or to maintain the integrity of an entire assembly of plants and animals. In order to accomplish these ends, we concern ourselves with the manipulation of forces that influence mortality, with other conditions that govern distribution, and finally with attempts to increase or decrease the fecundity of the species.

Desirable wildlife populations are not always a natural result on lands well managed primarily for other resources. Such generalities as "What is good for one resource is good for another" obscure the potentials of coordinated management of timber and wildlife. For example, a small reduction in the production of timber may permit a substantial increase in wildlife production. Although the incidental improvement of wildlife habitat conforms with most definitions of multiple use, the objectives, procedures, and actual results of land management practices need to be analyzed to ascertain the proper direction and extent of the application of multiple use concepts.

Interspersion of types

Most species of wildlife are "edge" creatures. They make extensive use of openings and early forest successions and are benefited by a mixture of vegetative, topographic, and moisture conditions. The need for "interspersion" in the habitat is an accepted principle in wildlife management and it applies as a basic objective in developing productive environments in forested areas.

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Fish and game will be most abundant where adequate food and cover conditions occur. Interspersion is the most important word in the wildlife dictionary. Rarely is wildlife found in significant numbers when the vegetation is of one type only. Although wildlife may not be dependent on a particular tree per se, they are dependent upon the association of plants of which it is a part.

Food

Big game prefers forbs in the late spring and summer when available, browse in the winter and early spring, and grass at other times when available. Young trees may be eaten at any time, but this is particularly true when other food sources are scarce or lacking. The diet of fish changes seasonally as plankton, insects, and smaller fish species become available for food.

Cover

All wildlife and fish species require cover for resting, giving birth to young, nesting and escape. With the exception of those animals that rely on speed to escape their predators, they are rarely found very far from it. Forests, in their natural state, provide adequate cover. In fact, mature forests frequently provide too much cover. As a result, sunlight is kept from the forest floor, and forbs, grasses, and shrubs cannot grow. In contrast, many of our pinyon-juniper control projects in big game areas have removed far too much cover and have not left large enough islands. I would suggest as a criteria that a big game animal should not have to travel more than 660 feet to cover and that half of the trees in an area be left for cover.

Water

Clean drinking water must be available within the daily travel radius of wildlife if maximum populations are to be maintained. For fish, the water must not only be unpolluted, but the volume must remain reasonably constant, and temperature fluctuations held to the minimum.

Reproduction

The most critical point in the life cycle of wildlife and fish species is during and shortly after reproduction. All species can, and do, produce far more young than will survive. As they mature, death losses decrease sharply. For example, 40% of the newly hatched quail population will die in the first three months. Two-thirds of the total population is renewed annually. A 50 to 70% fawn death loss occurs in deer in the first six months. The annual herd turnover is quoted at 30%. The mortality in fish is even greater. Out of millions of eggs,

hundreds of thousands produce small fish, but only a few thousand survive to maturity. It takes 4½ million eggs to produce one 14-year old, 35-pound striped bass. The management implications are clear. To produce more fish and wildlife, you must provide proper conditions for the reproduction and survival of young.

Nearly all changes to the forest watershed are reflected in the suitability of the aquatic habitat for wildlife. Thus the forester can effect habitat improvement or deterioration, depending upon the objectives and effectiveness of management. Through well-coordinated management of timber and wildlife, habitat conditions can be fostered; without coordination they may be damaged. Effective fishery management begins with watershed management.

Rotations and cutting cycles

With the increase of managed forests, the problems and opportunities of wildlife managers are changing. The development of markets for small trees, and more efficient equipment for logging and road-building, have shortened both the time required to produce merchantable timber, and the frequency of practical cuttings. These and the growing demands for pulp will also have significant impacts on fish and game production.

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To meet expected future sawtimber demands, more frequent and more extensive cultural cuttings can be anticipated. Substantial acreages support far too many trees per acre for acceptable timber growth. Log harvests can be increased by commercial thinning. Timber cultural operations can be favorable to wildlife if wildlife habitat enhancement is made a part of the multiple use plan. Each cutting offers opportunities for wildlife habitat manipulation.

While forest plantings on many sites are not detrimental to wildlife (and sometimes are beneficial) extensive solid plantations of a single tree species, especially conifers, leave little favorable habitat. Conifers create cover, but also decrease wildlife food production. In the long run, monoculture stands may prove more susceptible than mixed stands to hazards such as fire, soil degradation, wind blow, or the attacks of pests and disease.

Prescribed burning

Great progress has been made in controlling wildfire in forests. Losses have been reduced from a total of 15.5 million acres burned in 1950 to 4.1 million acres burned in 1962. We have also learned a great deal in the planned use of fire--prescribed burning--as a tool of forest management to reduce wildfire hazard, control disease and prepare sites for regeneration. We now know that controlled

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burning can be used beneficially without the catastrophic results of wildfire. Wildlife has benefited incidentally from many of the burns prescribed for timber management.

Vast number of plants in all parts of the country have through geologic time become adjusted to fire, a condition to which many birds, mammals, insects and other life have also become adjusted. The basic condition of the wildlife landscape is variety: forest, brush, grass, weeds, lakes, ponds, creeks. Abundant historical records indicate that during primitive times a fire landscape existed. It depended upon this agent as a source of disturbance to rejuvenate the quality and the distribution of its vegetative composition and animal life.

Logging

The harvesting of timber is an essential periodic operation on commercial forest lands. Unavoidably it disturbs the environment to a degree ranging from moderate to vast. Similarly the effects may be of short or long duration. From the standpoint of wildlife management, logging may be favorable or unfavorable.

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Moderate disturbance of the forest floor, along with opening of the forest canopy, promotes herbaceous and shrubby vegetation where little or none was present. Where seeding is practiced to stabilize exposed soils, natural plant succession may be artificially improved upon, and recovery hastened. Where slopes are steep or soils unstable, fishery values may be severely damaged. In clear cutting operations, large blocks are less favorable to wildlife than small clearings which provide better interspersion of habitat types. Logging slash, in small amounts, may furnish desirable cover for small game, but extensive areas of nearly impenetrable accumulations are a detriment.

Logging road systems, if properly planned, can provide access for wildlife harvest and management operations. On the other hand, improperly located, constructed, and maintained, roads may be the source of nearly irreparable stream damage, and they may become useless for recreation purposes. Choking of stream channels with slash and debris, invasion of stream beds by roads or road fills, channel changes, sediment from poor road drainage, and culverts that impede spawning runs are particularly damaging. Studies indicate that road construction is the greatest source of stream damage.

Logging may always be aesthetically destructive, but it need not be as permanently destructive of wildlife values as some operations now are.

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Grazing

Grazing of domestic livestock and big game can benefit the vegetation if carefully controlled. However, most mature or unthinned second growth areas contain limited amounts of grasses, the principal food source for livestock, and growing seasons in higher elevations are of short duration. Livestock are forced to use forbs and browse species for subsistence, steep slopes are grazed, vegetative cover and litter is reduced, and in extreme cases, erosion occurs. Direct and severe competition with big game occurs for food. Forest openings are particularly vulnerable to overgrazing. In some situations, big game alone may reach population levels where damage to forage occurs.

I am certain that the primary source of water pollution, unstable water flows, and stream erosion is not poor logging practices on public domain forests, but to lack of grazing management of domestic livestock.

In closing, I would like to reiterate what you all know; that is, future production of fish and wildlife depends entirely upon the consideration you give these species in your forest management programs. I ask you to make wildlife a part of your forest management plans.

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RANGE MANAGEMENT

by

Glen D. Fulcher
Chief, Range Management Staff

Introduction

It is indeed a pleasure to meet with this group. We on the Range Staff seldom get the opportunity to talk to a group of foresters - or should I say multiple use resource managers with forestry backgrounds.

In the Associate Director's opening remarks he stated that we are not here with "pat answers" to multiple use management problems. Psychologists tell us that people like pat answers. Pat answers provide a crutch, something easy to fall back upon without requiring the person to do much common sense reasoning.

As a professor I found that students, the average ones at least, wanted pat answers. I especially had trouble with those students that were training to become county agents. They wanted to talk in such terms as all livestock operators should produce 90% calf crops, 5 tons of hay per acre, and obtain 400 pound weiner calves. They found it difficult to accept that each ranching situation was different and that production goals depended upon value judgments of the operators, capital available for investment and types of range operations involved. They were searching for easy answers, but there are no pat answers to fit all situations.

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The recent National Advisory Board Council meeting in Phoenix was a constructive meeting and indicated the Board is making considerable progress toward recognition and implementation of multiple use management of our resources. However, the major personal value I gained from attendance at the meeting resulted from my roommate having a book entitled "Situation Ethics." I found this book both interesting and captivating. It discussed attempts of various religious denominations to provide "pat answers" to Christian living.

The book explains that most denominations are doctrinaire and legalistic. It points out that even the Ten Commandments are a set of pat answers. It raises the question as to which of the Ten Commandments has priority. What do you do if a circumstance arises where, to fulfill one commandment, requires violation of another?

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In one situation in the book a father admonishes his over-righteous son by saying, "You are so full of right you can't see what is good." Have you ever seen someone who is so "full of regulations and legalistic opinions that he can't see what is right"?

The point I am trying to make is that the objective of the Range staff, and I am sure the Bureau staff in general, is not to provide pat answers but to provide guidelines which you as managers can use as tools for decision-making for any situation involving renewable resource management.

I would like to compliment the Forestry staff on developing an excellent agenda. I have only one serious complaint and that is the titles of the subjects for Forestry and Range--forage production and timber production. When Forest Management is reduced to timber production and Range Management to forage production, I will join the Arabs, fold my tent, and quietly steal away. I think some of the PPBS planners slipped up on us with these titles.

Range Management Program

When you are faced with the responsibility of developing and carrying out a range management program, where do you start?

I immediately found out that as a professor you can be much more irresponsible in stating what a program should be than you can as an administrator in charge of carrying out the program. As a professor you do not have to bear the consequences of your proposals to the extent you do as an administrator.

Fortunately, I got to start with an excellent and capable staff. We sat down and tried to analyze where we were, where we wanted to go, and why.

In evaluating the range management program we had to keep in mind:

1. We are in the land resource management business - not the livestock business.

2. We are managing under a multiple use program that requires proper consideration be given to all uses.

3. The management objective is to manage the lands to best meet the present and future needs of the people.

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4. People is our most important resource; therefore, our resource policies and our conservation philosophies must be people-oriented, nor merely resource-oriented.

Under these guidelines how does a range program fit?

The Bureau has initiated a unit resource analysis program. This doesn't mean the Bureau is starting on a new program with a clean slate. It means we are starting toward unit management from where we are. We will have to recognize past institutionalized agreements such as water rights and allotment boundaries. This means:

1. Grazing allotments are institutionalized within units. Therefore, grazing allotments are to be a part of unit resource analysis.

2. Management of grazing has to be on an allotment basis, but must be within the overall objectives for the unit.

The major objective of range management is range condition, not forage production. Forage production is secondary to the major objective of maintaining or improving the condition of the range. Good range condition is the key to most multiple uses of the resource and the sustained yield of renewable resource values. Livestock forage production, wildlife habitat improvement and watershed protection are byproducts of good range condition. However, proper livestock grazing is important in the improvement of range condition. Proper grazing use can complement watershed, wildlife habitat, and fire protection conditions.

With these objectives in mind, the Range staff set out to take stock of the Bureau's range program and how we should proceed.

What was the situation? We had a limited amount of personnel; extensive not intensive range management (one man for 800,000 acres); and funds and personnel ceilings not likely to greatly increase. Therefore:

1. We had to develop a system of management that could be accomplished with the people and funds available.

2. The system had to be as simple as possible and still result in effective management.

What was the minimum needed? (Note, we were not after the maximum - only the minimum needed to assure effective management.) We decided we must have:

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1. An allotment management plan.
2. An initial stocking rate. (This, we assume, is completed with the end of the adjudication program.)
3. Methods of evaluating the effectiveness of management.
    a. Again, what is the minimum needed?
        (1) Actual use (number and kinds of livestock and period of time used.)
        (2) Utilization (amount of available forage actually utilized.)
        (3) Trend (is the vegetative condition improving, remaining static, or declining?)
        (4) Climate (evaluation of the climatic data of the area and its effect on the vegetation.)

The key is the allotment management plan. What does it contain to keep us on track in multiple use management? Let me quote four paragraphs from the Allotment Management Planning Manual:

> "Objectives. To establish a grazing management program which obtains and sustains stable soil and watershed conditions and a dependable supply of forage in balance with other multiple uses . . .
>
> "Correlation. State the relationships of range management to other resource uses or Bureau programs. Identify major problems in the area. Describe the action required through grazing management to improve correlation.
>
> "Objectives of Allotment Management Plans. Objectives are the most important components of the AMP. Detailed objectives are to be stated in the plan along with the reasoning behind the stated objectives. These indicate the specific items to be accomplished in the allotment through management of livestock, such as production of a specified quantity and quality of livestock forage; protecting crucial wildlife habitat; accomplishing specific erosion control items; protecting natural areas; protecting reforestation areas, etc.
>
> "Grazing Systems. A grazing system is required and must be documented in each management plan. Describe in detail the grazing system to be used to accomplish the objectives. State

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> how the system will accomplish the objectives and why it was selected over other alternatives. Tailor each grazing system to the particular allotment. Correlate the system with the permittees' operational requirements, and with the needs of other resources and values. Specify management practices needed such as salting, riding, herding, etc."

Each of the requirements in the manual forces the area manager to think, analyze, and decide what system is best. He must also explain in the plan why he selected the objectives he did and why the particular system selected will, in his opinion, better meet the objectives than some other system. The manual is a guide as to the approach to take. The objectives and system to obtain the objective are left to the decision of the on-the-ground manager.

Allotment management plans are to be action plans - not paper plans. You should not implement more than can be evaluated and properly administered. The plan must be signed by both the Bureau and permittees. Where possible, the permittees will join in the allotment evaluation.

In developing our present approach we evaluated existing methodology. We took a close look at the Deming 2-phase condition classification. Throughout the Bureau there was considerable question about this method. What was its value? How was it being used? Was it helping in the decision-making process of resource management?

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These questions led to the Bureau hiring Dr. J. Schuster of Texas A&M to evaluate the method. As a result of Dr. Schuster's study, it became evident that the method was of little value to the Bureau and was requiring considerable manpower and money to carry out. Therefore, the method was discontinued.

The Parker 3-Step method of determining trend was also questioned. This method was carefully studied by Dr. F. Kinsinger. Because of statistical unreliability, difficulty in getting the same sample twice, and other reasons, it was discontinued also.

Some people in the Bureau may never forgive the Range staff for discontinuing these two methods. However, we must, with our limited personnel and funds, make only the studies that are necessary to carry out our responsibilities. We must not be carrying out studies that can place us in the position of being accused of just doing busy work.

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In summary, we believe we have initiated a progressive program of range management involving four basic steps:

1. Establish initial stocking rate.
2. Design a management plan containing a grazing system based on currently available knowledge.
3. Evaluate effectiveness of the plan by collection and analysis of actual use, utilization, trend, and climatic data.
4. Make adjustments in grazing management as necessary to meet objectives of the plan.

Grazing and Forest Lands

Dr. Zumwalt, in his statement, very adequately covered the broad policy aspects of the objectives of the range program. I do not believe further comments are needed in this area. Therefore, I would like to briefly discuss how grazing fits into a forest land program.

Not too long ago foresters largely condemned grazing on forest lands. Recently, I read a tongue-in-cheek article entitled "The Forester - The Unbiased View." It stated that all forestry students were required to take the course, Forestry 304, entitled "Hate Grass."

Actually, in the past, foresters had good reason for protesting about grazing. Livestock grazing was largely unregulated. Overgrazing resulted with direct injury to tree production. Excessive trampling accompanied by overgrazing caused erosion problems.

However, in more recent years, as a result of better grazing management, foresters and other resource managers see the opportunity for timber production, wildlife habitat improvement, and livestock grazing on the same public lands.

In the determination of current grazing capacities, suitability for grazing was a consideration. It is possible that in the past insufficient attention has been paid to suitability, especially on forested lands.

Not all forest lands can be grazed. Often there is too dense a forest stand and/or too steep a terrain to safely or economically graze livestock. Such areas should be classified unsuitable for

grazing. However, in open forest stands where grazing is possible and properly regulated, especially as to numbers, seasons of use, and management systems, forestry and grazing are compatible.

The degree to which forest land may be grazed varies with several factors:

1. Nature of forest stand - species density, growth form.
2. Composition and amount of the herbacious and browse vegetation present.
3. Palatability of the tree reproduction.
4. Amount and kinds of wildlife use.
5. Accessibility and season of use of the forest land.
6. Class of livestock and grazing system used.

Grazing in forest types must be flexible. As tree density increases and occupies space that formerly produced forage, livestock and game numbers must be adjusted. However, the importance of grazing on forest lands to the livestock producers should not be underemphasized. Grazing on these lands provides an important summer range which is extremely difficult to replace in rounding out the forage requirements for livestock operations. Actually, for summer grazing, forest lands are often better producers of forage for livestock and game than are open range lands because higher elevations result in more moisture, forage maintains quality longer, forest soils are more productive, and there are often highly productive meadow and park-like areas.

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Grazing by Forest Types

Pinyon-juniper - 74 million acres - Livestock and wildlife grazing is the major use of the land.

Coniferous Forests - 300 million acres in four recognized coniferous forest regions. It is estimated 70 percent of this area is suitable for some degree of grazing.

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1. Southern Rocky Mountain - essentially Arizona and New Mexico. Much of this area is an open ponderosa pine type and supports an abundant stand of forage plants. These areas provide high value grazing for four to six months during the summer and fall period. The Douglas fir-spruce areas in this region are usually forested so densely as to provide little grazing.

2. Central Rocky Mountain - essentially in Colorado and the Wasatch Range and Uinta Mountains in Utah. Trees are small in this area and lumbering is not a major industry. Livestock grazing is considered equal to lumbering in importance.

3. Northern Rocky Mountains - Wyoming, Montana, and Idaho. Timber production is of major importance. Some open timber stands suitable to grazing for two to three months in the summer. Much of the area has poor livestock forage conditions due to topography and density of stand.

4. Northwest Coastal - Western Oregon, Washington, and Northern California. Most important timber area in the Nation. Not important for grazing. Should be grazed only to the extent it doesn't interfere with production of timber.

In closing, we think grazing has a place on forest lands. Allotment management plans must be correlated with other uses. Grazing should be allowed on forest areas to the extent it is complementary or supplementary to forest management. Proper grazing on suitable areas for grazing does not seriously compete with other uses. Abusive overgrazing is where competition exists. We must have management that assures proper grazing. It will require the best cooperation and effort of all of us to achieve this goal.

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SOIL AND WATERSHED

by

William L. Mathews
Chief, Soil and Watershed Staff

Soil and Watershed Management of Forest Lands

The "National Spotlight" is on "Water" and the intensity of the "heat" being generated is rapidly increasing. The April 3, 1967 issue of U. S. News and World Report estimates the current expenditures for cleaning up our air and water at $5 billion per year with the amount increasing to $10 billion by 1970. Total cost is estimated to be $300 billion over a 30-year period. About 40% of the cost involves water pollution. Although the high cost comes as a shock, there is wide agreement on the need. In fact, industry, in many sectors, has heavy spending programs under way or approved to curb air and water pollution. The impact of such programs is already widespread. Where pollution problems are too costly to overcome, it can be expected that some plants will be closed down. An example is the Crown Zellerback paper mill at Ocean Falls, British Columbia, which is slated for closing this summer. In some areas the small sawmills are in a quandary trying to decide how to dispose of waste materials that have in the past been burned in incinerators. While some existing firms will not survive, new and expanding industries will be assisted by the pollution control effort.

The Bureau's primary involvement in water pollution control will be in the control of sediment. In some drainages pollution from soluble solids is also significant. The Federal Water Pollution Control Agency rates sedimentation as the number one pollutant in terms of magnitude of the problem.

Land management programs that contribute to sedimentation problems usually involve land in a deteriorating trend. Not only is such deterioration of wide concern because of water pollution, but also because of a loss in the productive soil base resulting in a decline in future use opportunities. This developing National concern was expressed by John A. Carver, Jr., while Undersecretary of the Department of the Interior. In one of his speeches he stated, "There is no longer an excuse, if there ever was, for allowing our public lands to deteriorate."

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Currently 123 million acres of land under the Bureau's administration are in a fair or worse condition. Of this acreage, over 45 million acres are of a "frail land" category with approximately 20 million acres presently in a deteriorating trend.

Although our land management programs have, in the past, given significant attention to conservation of soil and water, the changing times demand drastic further changes in attitude and approach. Even though management intensification is strongly influenced by appropriation levels, many changes are possible with the current funds. Progress in improved watershed management is of utmost importance to develop the attitudes and abilities which will be required to accomplish the resource management objectives of the programs that are just around the corner.

Watershed management is defined as a combination of complementary resource uses, land treatments, and structural works applied which will maintain and improve land productivity, water quality and quantity, and the timing of flow of surface and subsurface water. It also includes the prevention of soil and water damage and loss due to wind erosion, uncontrolled runoff, flooding, salinity, and sedimentation.

Bureau policy requires that all multiple uses of the land be conducted in a manner which will meet approved Bureau watershed management objectives whenever existing or potential usefulness of water, the control of runoff, or stability of the soil is impaired.

The Bureau will cooperate with Federal, state, and local agencies and organizations and private landowners in programs of mutual interest for water management, watershed protection, and flood prevention.

Goals and Objectives of S&W Conservation:

Long-term objectives seek to:

1. Provide permanent control and prevention of non-geologic erosion to the greatest extent practicable.

2. Protect, maintain, and improve renewable resources within watersheds for management under principles of sustained yield and multiple use.

3. Enhance on-site resource use values, including fish and wildlife development and utilization, livestock grazing, timber production, outdoor recreation, industrial development, mineral production, and wilderness preservation.

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4. Enhance off-site values including improvement of water quality, improved timing and yield of streamflow, renewal of groundwater supplies, control of floods, prevention of siltation of lakes and reservoirs, maintenance of navigability of rivers and harbors, protection of public health, and stabilization and improvement of local economies.

First priority is directed toward curbing deterioration of watersheds. The current plans call for accomplishment of this objective within a 25-year period. However, there is strong evidence to indicate that the 25-year period will not be compatible with other time tables which involve water quality. We may, therefore, be required to substantially accelerate our program.

Soil and Water Protection in Timber Management

Timber management can have a strong influence on water yield, water quality, soil stability, wildlife, recreation, etc. Therefore, a careful appraisal must be made of the influence of timber sales within a given watershed upon the non-timber values. In some cases, water requirements may dictate that certain timber stands at upper elevations, sites involving unstable soils, or areas adjacent to stream courses be left as protective cover. In other situations, the patterns of harvest may be designed to increase snow accumulation and water yields.

The opportunities for enhancement of watershed values in BLM timber management programs vary substantially as to the influence on water quality, water quantity, runoff control, and soil stability.

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Water quality can be strongly influenced by the management of both the commercial and the non-commercial (including woodlands) forests. This facet should receive paramount consideration in all timber management efforts.

Water quantity can be significantly influenced in some situations and unaffected under other circumstances. Further, the need for increasing water yield varies widely. The commercial forests managed by the Bureau are generally not in drainage basins that are water-deficient at this time so as to warrant strong consideration of harvest methods and patterns that will increase water yield. Undoubtedly as time passes, the increased demands for water will require greater attention to this aspect.

In contrast, the woodlands generally occur in watershed basins that are seriously water deficient. Unfortunately, total water yield cannot be increased from most woodland areas by management or treatment practices since the annual precipitation is usually less than the

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potential evapo-transpiration water losses. For example, in southeastern Arizona, studies on the 3-Bar experimental watershed indicate that annual precipitation must exceed 17 inches per year before manipulation of the woodland cover will increase water yield. In the cooler climates a lesser total annual precipitation would be required; however, the potential evaporation-transpiration water loss still usually exceeds the annual precipitation in the woodland areas.

Opportunity for runoff control exists in the management of both the commercial forests and the woodlands for controlling the rate of water runoff. In the commercial forests there are many factors which control runoff such as the size, shape, location, and distribution of cutting areas, logging methods, equipment used, etc.

Runoff from woodlands can be influenced by changing the vegetative composition and the installation of water control structures such as detention dams.

Considerable opportunity for influencing soil stability exists on both the commercial and noncommercial timber lands for employment of harvest, rehabilitation, and management practices that contribute to soil stability.

Advance planning in timber harvests, as you all well know, is a key to success. The location, size, and distribution of cutting areas, location of temporary roads and skid trails, logging methods and type of equipment, timing of the harvest and use and protection of channel crossings may affect the water resource and watershed management. Layout of cutting areas across live streams should be avoided, and protective strips of forest should be left along streams where possible. Removal of timber on steep, thin-soiled slopes next to streams is often uneconomical and usually creates excessive soil disturbance and erosion which delivers sediments directly to the stream. Logging on channel banks disturbs the channel, adds sediment and slash to the stream, and, if by tractor, may present a gasoline and oil contamination problem.

Size, shape, and distribution of cutting areas affect snow catch in mountain areas. Cutting patterns in strips across prevailing wind directions may be specified to increase snow storage. Effects of snowmelt rates and spring flood runoff need to be considered, as do effects on the soil with respect to regrowth of new cover to stabilize and protect against erosion. Allowable extent of disturbance of the soil must be considered in terms of soil stability, steepness of slope, and climate.

Service areas and landings, temporary roads and skid trails should be located away from natural drainageways. Rocky fords or temporary log culverts should be used for necessary channel crossings. The entire operation should be planned so there is no necessary yarding across streams. The skid trail pattern should be planned so that it does not superimpose a new drainage pattern on the area.

Camps and millsites should be located where soil disturbance and sewage, garbage, and rubbish disposal will not affect water adversely. For operations in municipal watersheds, portable chemical toilets should be used on the job.

Service areas and landings should be diked to contain muddy drainage and oil or gas spills. Drain waters should be directed to locations where they can filter into the forest floor, and should not be permitted to move directly into stream channels. Natural drainage should be directed away from landings and service areas.

In logging, trees should be felled uphill away from channels. Tractors should be kept out of channels, off channel banks, away from steep slopes and wet soils. Skid trails should be used as few times as possible to avoid trenching and excessive compaction. Skid trails should be drained at frequent intervals.

We should notify water users of coming temporary changes in water quality that may result from particular logging operations. This is especially necessary in municipal watersheds or where special fish and wildlife or recreation uses are involved. Advanced notice gives the water users the opportunity to offer recommendations that may alleviate pollution problems or to take necessary counter action to provide for sediment storage or treatment facilities.

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Sale administration and enforcement of protective practices in timber sale contracts are of utmost importance in watershed protection. Watershed protection and stabilization practices included in all sales contracts must be tailored to fit physical conditions on the ground, amount of disturbance expected, and the importance of the watershed areas. Requirements should only be those needed to meet the requirements of the particular situation, but their strict enforcement must be secured.

Cleanup and restoration after the timber harvest is completed must be also adequately accomplished to provide the needed protection of watershed values. Skid trails and temporary roads should be scarified and mulched with slash and, where necessary, seeded to grass, forbs, browse, or trees. Water bars should be installed at frequent intervals to prevent concentration of runoff and divert it to safe locations where it can filter into the forest floor. Log, rock or other barriers should be placed across road entrances to prevent further use by vehicles that might break down the water bars.

Dikes around landings and service areas should be checked and repaired to insure their retention of muddy drainage. These areas also should be mulched with slash and seeded or planted.

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Logging debris should be carefully cleared from stream channels with as little disturbance of natural stream bed conditions as possible. Temporary culverts and bridges must be removed. Disturbed streambanks should be sloped, mulched and staked, seeded or planted. Steep banks broken at the top should be supported by log and rock cribbing and protected against movement.

Disposal of slash by lopping and scattering should be used where slash is needed for soil and water protection.

Garbage and sewage pits should be covered with 3 or 4 feet of earth and compacted. Campsites should be raked or scarified, mulched, and seeded or planted so that hydrologic functioning may be restored.

Inspection and needed followup maintenance should be made a year after completion of logging to insure that watershed protection measures are functioning properly.

Soil and water protection requirements in the construction of roads and trails vary considerably due to the wide range in terrain, soils, climatic conditions and watershed values. Therefore, considerable judgment enters into the selection of location and specifications for individual roads. We have many examples of roads which were improperly located, poorly designed, and roughly constructed. They are almost impossible to maintain properly and contribute significantly to sediment and runoff problems.

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From the standpoint of watershed management, the location of roads and trails on benches or ridgetops is preferable to sidehill locations or to the encroachment on channels in narrow valleys. Unstable rock and soil conditions should be avoided where possible. The gradient should be fitted to topography and soil conditions.

Care should be taken in road designs to avoid the possibility of concentration of drainage and erosion on the road surface. Likewise the runoff must be disposed of in a manner that will avoid ditch and cut side banks erosion.

Construction work should be done during the dry weather as much as possible. Excess material should be end-hauled to safe locations and not overcasted into channels.

Surface soil from borrow areas should be stockpiled and saved to be spread over the disturbed area when excavation is complete. Mulching and seeding or planting should then be done to complete the restoration job and stabilize the soil. Drainage above borrow areas should be directed away; drainage from borrow areas should be led to locations where it can filter into the forest floor and not contribute muddy water to streams.

Soil stabilization should be made a part of the cut-and-fill construction job. This may include simple measures such as raking natural litter from adjacent sites to cover bare surfaces; mulching with straw, chips, sawdust, or brush; seeding; planting; staking; terracing; and installing special drainage troughs.

When roads cross natural drainageways, culverts should be installed on the natural slope. They should be of adequate size and length to fully meet the need.

Checklist for Watershed Management on Forest Lands

I. Watershed Problem Areas

1. Are burns promptly revegetated as needed to protect soil and water values?

2. Are the normally prescribed precautions taken to protect soil and water while harvesting fire-killed, insect-destroyed, or blowdown timber?

3. Are unit personnel alert to watershed problems?

4. Are firelines and temporary fire roads drained, as needed, immediately following suppression of fires?

II. Logging Aspects

1. Do logging plans specify areas of relatively unstable soil to be protected?

2. Are landings treated to prevent erosion?

3. Are sediment settling basins provided below landings where necessary?

4. Is use of tractors on steep and unstable soils causing erosion and stream siltation?

5. Are tractors used only when soil is firm enough to properly support them?

6. Are tractors kept out of stream channels?

7. Are trees felled or yarded across streams?

8. Do logging practices disperse rather than concentrate runoff?

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9. Are skid trails located as far from live streams as feasible?

10. Are skid trails, landings, and spur roads properly drained?

11. Are skid trails and landings reseeded promptly where needed with soil-stabilizing species where this practice is advisable?

12. Are efforts made to scarify and loosen compacted soil in landings and skid trails compacted during logging?

13. Are temporary culverts and bridges removed at the end of the logging operation?

14. Is logging debris kept out of stream channels?

15. Are log jams removed from stream channels?

16. Are firebreaks around clear cutting properly drained?

17. Is slash burning modified when the residue is needed to protect soil and water?

18. Are winter logging operations planned so that damage from high water-flow during the spring breakup is kept to a minimum?

19. Are erosion and runoff control measures installed promptly as logging is progressively completed?

20. Are contract specifications for avoiding damage to soil and water adhered to?

21. Are contract specifications for watershed protection satisfactory, as judged by results?

22. Are logging methods (tractors, jammers, etc.) suited to the slopes and soils where they are used?

23. Are logging activities conducted on areas where severe watershed damage is caused (steep slopes with erodible soils; meadows)?

III. Road Aspects

1. Are roads built away from swales, valley bottoms, and elongated depressions?

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2. Are roads built on benches, ridges, and toes of slopes where feasible?

3. Do roads avoid seeps, clay beds, slide areas, and steeply dipping formations?

4. Are there adequate buffer strips between roads and streams?

5. Are natural stream channels altered only where the need is urgent?

6. Do gravel and borrow pits contribute to soil displacement and stream pollution?

7. Are cut-and-fill material and debris permitted to reach stream channels?

8. Are road-clearing widths excessive?

9. Are cut-and-fill slopes of proper gradient for soil class encountered?

10. Are cut-and-fill slopes stabilized by mulching, planting, retaining walls, or other measures as necessary?

11. Are fill materials suitable to withstand wet season slump?

12. Are fills compacted by rolling during construction when necessary to insure stability?

13. Are road surfaces contributing to stream silting by vehicles splashing muddy water into live streams?

14. Are road surfaces crowned to prevent concentration of water on road?

15. Is surfacing material spread over road surface rather than windrowed along edges?

16. Are fill slopes safeguarded from road surface runoff by a protective berm (shoulder, ridge, or curb)?

17. Are culverts (or bridges) of adequate size and length installed at all stream crossings?

18. Are culverts installed on natural slope of the land with headwalls and footwalls as needed?

19. Are bog holes in roads drained promptly after discovery?

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20. Is water diverted from roadside drainage ditches sufficiently often to prevent ditch scouring?

21. Are drainage ditches placed above cut slopes as needed to divert runoff from the slopes?

22. Are culverts and drainage ditches cleared of debris prior to rainy season and at other times as needed?

23. Are roads sprinkled and graded as needed during use?

24. Are trails contributing to silting of streams?

25. Are nonsystem roads closed to public travel and properly treated?

26. Is incomplete construction suitably drained at the end of the work season?

27. Is ditch-blading done so as not to undercut road slopes?

28. Do watershed management staffmen review road plans prior to final approval?

29. Are specifications for erosion and water control in the road plan adhered to?

I know the material I have presented is "old hat" to most of you fellows. There is nothing new in what I have presented. However, I hope I have generated some enthusiasm for taking a fresh look at the adequacy of the job we are doing in soil and water conservation.

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FORESTRY

by

Archie D. Craft
Chief, Forestry Staff

Up to this point in this conference, you have been hearing about some of the different uses of forest areas and the value of these forest areas for watershed protection, wildlife habitat, and recreational use. We will now discuss what I feel is the most critical use of forest areas--that of timber production.

Why is timber production the most critical use? It is the most critical in that timber production is the most disturbing factor affecting the forest environment. Most other uses leave the forest in more or less its natural state. Timber production and timber harvesting, which is necessary if timber production is to be maintained, drastically modifies the forest environment. As such they must be subjected to a thorough analysis as to why we prescribe certain practices and what will be the net effect of these practices on the total forest environment.

Timber production is also important in that the sale of forest products can be the most valuable product from the forest. This, however, does not apply to all forest areas. There is a great variation in value between the highly productive and highly valuable timber lands of the West Coast and some of the marginal or submarginal forest lands found on some of the public domain areas. Our practices and our timber management programs must be flexible to reflect this changing relationship of value, productivity, and variation in demand for other forest uses which we encounter.

At this conference we have representatives from all the eleven Western states and Alaska. From a forest standpoint, this includes the whole range of forest types and conditions from the coastal forests of Oregon to the ponderosa pine forests in the Black Hills of South Dakota, and the white spruce-black spruce-birch forest of interior Alaska. What can I say to you which will be meaningful to all forest areas and conditions? What are the basic criteria which are the same for timber management programs in Salem, Oregon and Albuquerque, New Mexico or Fairbanks, Alaska? What a wide range of forest types and conditions this area covers--but there are similarities between them. There are basic principles of timber management which are the same. It will be these basic principles which I will be discussing.

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Before we go further, maybe we should define timber production. When we say timber production, what do we mean? What is the difference between timber production and forest management? Basically, forest management is the management of forest areas for all uses and resources of the forest. Timber production is the management of the forest to produce trees which can be harvested and sold to produce a crop income. This crop may be sold as posts, poles, fuelwood, pulp, or sawtimber, but in all cases it is a crop.

One assumption which seems to have been prevalent in our timber management programs in the past was that all forest land was timber-producing land. All we can correctly say is that all forest land has or has had trees growing on it. The fact that trees are growing on a particular tract of land does not necessarily mean that this tract of land can be managed for timber production. This distinction appears to be a hard one to grasp for some of our land managers. The distinction is--can these lands be managed for timber production--not whether or not timber sales can be made on or from these lands.

Manage, according to Webster, implies direct handling or manipulating toward a desired result. In this case the desired result is sustained yield of timber products. Timber sales are a tool to realize this end result. Timber sales can be made on submarginal forest lands but the sale under these conditions becomes more of a mining operation rather than a means of realizing a sustained yield of timber products. Many of our forest lands which I would call marginal or submarginal support a crop of trees. This present stand of trees is the result of biological factors which have been at work for many hundreds of years. Whenever we do anything to this stand of trees, such as timber cutting, we must realize that we are drastically altering the existing environment. In so doing we may create conditions which make it nearly impossible to reestablish a timber stand on this area. At times it may be necessary to "mine" some of our forest stands, but we should recognize what we are doing and the difference between this type of operation and that of sustained yield timber production.

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We have made mistakes with some of our forest management practices in the past, but I hope we have learned from those mistakes. We could also say that they weren't mistakes but rather a natural evolution in our timber management programs--an evolution resulting from changing emphases of technology, demand, and awareness of the role our forest lands must play in a changing society. This evolution will continue and we must be ready to change with it.

The public domain timber inventory program is a good case in point. This inventory was completed several years ago. The next logical step after an inventory is completed is to declare an allowable cut. This has not yet been done--and probably will not be done for some time. We feel that there are some good reasons for this. Some of these reasons are as follows.

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First, this inventory has given us only some of the data presently needed. Much of the basic data is still either missing or has not been compiled.

We need to know the growth potential of each area, the type, size, and volume and value of products the site is capable of growing. Different levels of management, i.e. inputs, greatly affect the output in both intermediate and harvest cuts, and we need to determine what are reasonable assumptions on different levels of management for different sites and what effect this will have on our overall timber production.

Many laymen--nonforesters--consider an allowable cut to be just a simple calculation of the amount of timber growing annually and, therefore, the amount that can be cut. Believe me, this is not the case. The allowable cut is the summary of all the biological, engineering, silvicultural, public, political, and industrial factors which make up the total timber program, and not all of this information has yet been gathered.

However, there is much that can be done now--which brings us to Unit Resource Analysis. The concepts which we have briefly set out in the instructions for the preparation of Unit Resource Analysis will be closely tied to all of our timber management program. This will affect some of your timber harvest practices as well as your allowable cuts.

What is it that we are asking you to do in the timber production portion of Unit Resource Analysis? First, and foremost, we are asking you to identify your different forest areas according to their potential for management for timber production. This is not necessarily an easy decision to make. You must consider many factors in order to determine the potentials of forest areas for timber production. The work which was done under the forest inventory, whereby forest lands were classed as commercial or noncommercial, is not enough. A new objective look should be given to all these stands, and various factors as they apply to these stands must be considered.

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The factor which we should look at first, and which often isn't given the attention it's due, is site index. This is one of the first things we should consider. Why is it so important? Site index is important in that it provides a measure of all the growing factors of an area--soil, moisture, topography, elevation, and aspect. It doesn't measure these individual factors for us, but it does provide a composite index of their effects on tree growth. These factors affect different species of trees differently.

Without this determination of site index we cannot properly devise timber management plans. Site index should be a primary consideration of whether or not we cut a stand, the type of cutting involved, and what treatments we give the area after it is harvested.

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The normal yield tables are a corollary to site indexes. These tell you what you can expect of a stand--how much volume of wood it will produce in a certain number of years for different site indexes. The higher the site index the greater the productivity of the stand. Site index measurements and yield tables are a must under the PPBS concept of determining inputs and outputs. Outputs cannot realistically be determined without knowing your site indexes and the use of yield tables.

Determining what the site index is, is only the first step. You must also analyze what this means in way of potential for timber production and stand treatments. If the site index is 50 or below, regardless of the species, the stand probably does not have the potential to be managed for timber production. This indicates that the stand is growing under marginal conditions. Not much volume can be realized from the existing stand and if the existing stand is cut the chances are that you will have trouble getting a new stand started. We cannot afford to put investments into these stands in the way of planting of trees or in stand treatments such as pruning, since the growth potential on these poor sites is so low that we can never get a return on our investment.

When we are trying to determine the potential of a forest stand to be managed for timber production, the site index is probably the most critical factor - but it is not the only factor which must be considered.

Other factors are:

Operability - Can the stand be harvested under present or foreseeable technological methods?

Soil and erosion - Is the soil so thin or so highly erodible that undue damage would result from timber harvesting?

Regeneration - If the present stand is harvested is it possible to get a new stand started?

In determining the potential of a forest stand for timber production based upon regeneration factors, there is only one yardstick which can be followed. That is, can the stand be regenerated naturally and how long will this take? Artificial regeneration such as planting and seeding should be justified on the basis of how much it can speed up this process of regeneration and not justified on the basis that this is the only method by which the area can be reforested. If this is the case, it is a good indication that the stand was improperly marked for cutting or shouldn't have been cut in the first place. There are, of course, some areas which were denuded by fire or other

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means before the area was put under management, which need to be reforested artificially; however, even in these cases an analysis of site potential must be made to determine whether the eventual outputs will justify present costs.

These are some of the main points which should be considered in determining the potential of a stand to produce timber products on an economic basis. There are still other factors which we will not explore now, but which may be valid in your particular areas if you think seriously on this subject.

In Unit Resource Analysis we ask you to make this determination of timber producing potential and after it is made, to group forest lands in timber management potential classes. This gives you a broad picture of your timber resources. It doesn't tell you what you should do with individual stands, how you should do it, or the sequence of actions. These are technical decisions which need to be developed over time, but Unit Resource Analysis does give you the base upon which you will build your technical timber management programs conditioned upon overall forest land management decisions which may be made.

Confusion seems to exist in some people's minds as to whether some of the decisions made under the timber production portion of Unit Resource Analysis are overall management decisions rather than technical decisions. I say that they are technical decisions. We are determining the potential of forest areas for timber production--which is a technical decision. The fact that certain lands may be classed as having the potential for timber production does not mean that these lands will necessarily be managed for this purpose. It only means that they can be, but it will be a management decision which determines what this land will actually be used for or othe combination of uses which will take place on this land.

In determining the potential of a forest area for timber production the whole forest environment must be considered. If we disturb the forest environment to the point where we make it incompatible for tree growth or regeneration, we are destroying our timber producing potential of these lands. This is particularly true of the soil and moisture regime of the forest areas and we cannot ignore these in determining the timber producing potential of the land. This is just as true in western Oregon as it is here in Colorado, although the situation is much more critical in many of the public domain areas due to the more marginal or fragile growing conditions.

This realistic appraisal of the timber producing potential of our forest lands and an awareness of the conditions of how and why this timber is growing, is a must, if we are to evolve a realistic timber management program which will meet both present and future needs for

timber products and which is compatible with other uses of the forest lands. It must be based upon the conditions and program that we actually have and not what we may like to have. If we do not have forest lands in some areas which are capable of being managed for timber production, we should realistically face this fact and concentrate our efforts on those areas which can produce.

We do know that increasing demands for all uses will be made upon our forest lands. This includes demands for increased water quality and quantity, additional recreation use, protection or development of wildlife habitat and forage, and increased timber production.

The 1965 Forest Service's "Timber Trends" forecasts a rise in national timber consumption need of 50%, a doubling of plywood needs, and a near tripling of pulp and paper needs by the year 2000. This trend translates into a potential production gap of a 23 billion board foot deficit by the year 2000 under a continuing of current supply, production and management trends. In a forest management perspective this quickly changes focus from an interest in long range projection to an immediate management problem. Contrary to popular belief, there is no surplus of timber-producing lands. Prospective timber growth and inventories in the U. S. appear sufficient to meet projected demands for the next two or three decades but not in the later years of this century. We can also look forward to an ever increasing attrition of our timber acreages through development of access, through loss of acreages to single purpose uses, and through demands of multiple purpose uses instead of strictly timber production. Of course, the Bureau alone cannot fill the gap. Current annual BLM production in the high potential Douglas fir region is about 1.330 billion board feet. On the widely scattered forest lands of the public domain, the annual cut is only about 140 million bd. ft. Certainly there is much potential to be realized on the highly productive sites of the Douglas fir region. Our first "Guides to Land Management" efforts are just beginning to probe future management capabilities. As inventory data and production criteria are more closely analyzed, and as industry grows to meet increased national needs, there is little doubt that much more will be asked of the public domain forests. Already the pulp and paper industry of the Lake States is making tentative soundings of the Rocky Mountain region's considerable potentials for pulp production. Our board foot inventories may greatly understate the productive potential of these forest lands.

It is with our second growth stands that we really have the opportunity to practice intensive timber management. Under proper management - with thinnings initiated at regulated intervals - and through spacing of trees to obtain the optimum growing conditions available on that site, we can greatly increase the usable volume from these stands.

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Our timber programs have traditionally been the harvest of mature stands and many of our practices have been oriented toward meeting an allowable cut, sustaining local industry, and making so much timber available for harvest each year. This is important and must continue, but in some cases the philosophy or rationale behind some of our practices must change. Rather than thinking of only meeting a timber sale plan or an allowable cut quota, our primary consideration should be what kind of groundwork are we laying for future timber crops. It is on the basis of the future timber stand conditions and how well we have provided for them that our present timber management program will ultimately be judged.

What are the steps we should be taking now and what are the future trends that we can now visualize which affect our timber management programs?

1. As repeatedly mentioned, we must realistically identify our timber producing potentials of the various forest lands.

2. The amount of timber which we have available for harvest, in other words, the allowable cut, should be based first upon this identification of productive forest lands and, second, upon management assumptions concerned with the anticipated intensity of timber management and the results of this management. In time we may be less concerned with the present definition of sustained yield as it relates to even flow and may alter the even flow concept. This is presently under study.

3. We should concentrate our management efforts upon those lands which have the highest potential to produce timber products. Submarginal forest lands may be devoted to other uses or considered to be in a timber bank until such time as advancing technology or demand makes it feasible to manage these stands for timber. As long as we have productive sites which have not been brought up to their full potential, we should not waste our funds and manpower in trying to develop marginal timber areas.

4. While cruising,appraising, and selling old growth timber will continue to be an important part of our timber management programs, we must gradually shift our emphasis to the management of young growth stands to maintain these stands at their maximum productive capacity. We must recognize that the techniques of management are markedly different between old growth stands and young growth stands. We should be developing a trained cadre of foresters who would possibly

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work only on the management of second growth stands since the procedures of marking, cruising, sale administration, and even slash disposal are considerably different on these stands than they are in old growth stands.

5. In young growth management, site indexes become very important. Much of our management practices will be based on basal area measurements. Management prescriptions must be closely tailored to each individual stand and demand. In our highly productive lands on the West Coast, intermediate cuttings may be solely for pulp purposes, with the harvest crop designed to be sawtimber. On some of our other stands, and particularly some of our ponderosa pine and lodgepole pine stands, all of our management practices may be designed for maximum pulp production with little, if any, sawlog production once the old growth stands have been harvested.

Since this conference is on multiple use management of forest lands, I would like to draw a brief correlation between the timber production program and other multiple uses of forest lands. Realistically, the timber management program must be adjusted somewhat in order to be compatible with multiple use objectives. We know that multiple use on every square foot or acre is an impossibility. Only on a large area can multiple use be implied.

In considering the question of multiple use, there are several obvious situations which occasionally need to be re-emphasized. First, timber production is only an important use on forest lands where the potential for timber production, as opposed to only timber harvest, has been identified. On forest areas which do not have the potential for timber production there is naturally no conflict with other uses of the forest unless you are going to log or mine these areas regardless. Second, on the timber producing lands, timber production is not necessarily incompatible with other uses and, in fact, will often enhance these other uses.

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The key as to whether these other uses and timber production are compatible rests with the advance recognition of the potential for these other uses as well as for the potential for timber production, the identification of management goals, and the preparation of detailed advance plans to meet these goals. A judicious compromise will at times need to be worked out. In some areas the full producing potential for timber production may need to be reduced to allow for recreational and aesthetic considerations. In other situations it may be necessary to compromise on the recreational potential to enhance or allow the full timber producing potential.

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Recreation planning often appears to be based upon the identification of and development of an individual site with little consideration of an overall recreation plan. As such, there are occasionally definite conflicts between recreation developments and timber production. In many areas, and in particular the public domain areas, I wonder whether the recreational demands on forest land couldn't be met by planning the recreational developments for those areas which have been classed as not having the potential for timber production and thereby allowing timber producing areas to be managed for their full potential. Of course, this couldn't be done in all cases but I'm sure it could be done more often than most realize. The problem in the past has been that, first, recreational developments have been largely opportunity-oriented and not based upon an overall plan, and, second, there had not been a realistic identification of which forest lands had the potential to be managed for timber production and which ones didn't.

Another consideration which should have merit in many areas is that of a "rest - rotation" system for campgrounds and picnic areas. Since we are talking about a period of 60 - 100 years where timber production is concerned, it appears feasible to consider the concept of moving camping or picnicking areas every 20 years or so to different locations. This would allow a period of time to practice necessary silvicultural practices, including logging, on the alternate site, thereby maintaining its productivity while the recreational needs of the area are taken care of on a previously treated site. Under this concept the total potential timber productivity of the area could be maintained while still providing recreational developments.

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In respect to other uses of forest areas there is seldom any conflict with timber production; in fact, timber production often enhances these other uses. Through opening of the forest we create more edges and forage for wildlife and enable more moisture in the form of rain and snow to reach the ground. All of this can be done but how well this is done will depend upon several factors. First, we must identify all the present conditions and development potentials for the forest areas. This essentially is what is being done under Unit Resource Analysis. Secondly, we must identify management aims and goals for all uses based upon both present and future needs. Third, we must prepare detailed management plans to carry out the overall management goals. These detailed plans will need to be developed largely on a functional basis but thoroughly coordinated with other functional plans. In the development of functional plans I feel that the one for timber production is the most critical since this is the factor which alters the forest environment to the greatest degree and is the tool whereby other management aims will be realized, whether it is improving wildlife habitat or increasing water yields.

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Basic to resource management and utilization is access: whether or not we seek access for a single resource or the entire spectrum of forest uses, we must be able to reach and manage the lands unrestricted. The public is no longer content in knowing the larder is chock-full of resources effectively held under lock and key. Pressures for access are reaching the explosion point to where public needs must be satisfied. It appears that these pressures are cutting across all functional activities without exception.

As most of you know, the Bureau's access acquisition policy is still under development. For some time, however, our acquisition program, for the most part, secured rights for the people of the United States generally to our timber lands; most of this access was precipitated by timber sale plans. We must now recognize the full impact on all forest resources in developing our management plans. No longer can we be satisfied by providing access solely for timber development purposes. Our plans must consider access which provides for utilization of all resources. Although we have made studies in the field of access, we have a long way to go. Let's not ignore it. Our experience has been that nothing is to be gained by sidestepping access problems. Our access needs must be identified and programmed with integrity.

Along with new developments in our access program, I want to touch also on some developments which are taking place in our timber management programs. These mainly concern uniformity between some of the timber sale practices of the Forest Service and those of the BLM. To date, the principal effort has been applied to the appraisal procedure.

I hope most of you have had the opportunity to read Information Memorandum 67-49. It was mailed to all state directors and service center directors on April 7, 1967. This memorandum gives some detail on the present position of the Bureau in this regard. However, additional background is appropriate to focus on our present status. In the mid-1950's the first direction came to us on uniformity. Most of the early efforts and direction culminated in the so-called "Shanklin-Hixon" report of December 1, 1960. This report, Uniformity of Forest Management Practices in Western Oregon Between the Bureau of Land Management and the Forest Service, was prepared jointly by the Office of Assistant Secretary, Public Land Management, Department of the Interior, and the Forest Service, Department of Agriculture, and contained 13 recommendations concerning uniformity of forest inventories, timber appraisals, measurement, and several other management practices. These recommendations were adopted by both departments. On May 4, 1961, the Forest Service, Bureau of Land Management, and Bureau of Indian Affairs were directed to implement these recommendations immediately. This direction came from the Assistant Secretaries of the two departments. These 13 recommendations were far reaching but covered many specific principles

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which concern us today. In some ways they set the stage on much of our effort taken these past 18 months in our efforts to work out uniform principles with the Forest Service. Subsequent events, closely related to uniformity, but focusing primarily on timber pricing, have further directed our recent efforts. In June 1964 a BOB User charge study was completed. With reference to timber, it stated: "The Federal Government should recover the fair market value for Federally-owned timber and timber products. Timber appraisal should reflect fair market value and timber resources should be sold, using competitive bidding procedures to ensure proper revenues from such sales."

This was followed by several General Accounting Office reports on the subject. Significant of these are the ones on:

1. "Questionable aspects of oral auction bidding for Federal timber sold at certain locations in the Pacific Northwest." (February 1965)

2. "Report on analysis of certain aspects of bidding by both sealed bids and oral auction bids on National Forest timber in the Northern Region (Region 1) and the California Region (Region 5). (October 1965)

3. "Need to resolve differences in procedures used by Federal timber management agencies in appraising timber offered for sale." (December 1966)

The real question being asked was, "Is the Government receiving a fair return for its timber?" The question received critical attention as a result primarily of high bid ratios and the significant volume sold as single (appraised price) bid sales. The real concern was one-bid sales. This was the key issue. It was reasoned that if overbids could average 60% or more above the appraised prices, then those buying at the appraised price were getting a windfall. In other words, there was a lack of confidence that our appraisal was attaining a fair return. The Comptroller General suggested the use of sealed bids as a solution to the problem. The Bureau of the Budget suggested that the fault may rest with the appraisal systems of the two agencies as well as sale practices. In the summer of 1965 the Bureau of the Budget asked the two departments to undertake a joint study of these pricing procedures including a review of their respective appraisal systems. We were also asked to develop a program of ways to become more uniform in appraisal of timber. A joint study and report was completed in May 1966 and sent to the Bureau of the Budget in June. Review of this report with the Bureau of the Budget resulted in

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proposals for several actions concerning timber sale and appraisal policies and procedures. Subsequently the two departments set forth proposals for actions to be taken by the Forest Service and the Bureau of Land Management. These proposals call for consultation with representatives of forest industry prior to adoption. The first such meeting was held in Washington, D. C. April 6. Information Memorandum 67-49 transmitted the "highlights" of this meeting--actually a handout to the industry group. I have just returned from discussing the same basic issue with Western Forestry Industries Association at their annual meeting in San Francisco last Saturday, April 15, 1967. We plan an O&C Advisory Board meeting in mid-May on the same subjects. Uniformity is a key issue in our forest management program right now.

You ask: "What does it mean to me, the manager? What will we be expected to do - What does it mean to the Bureau?" Let me touch on a few points relative to anticipated developments:

Appraisal Systems

The BLM and the Forest Service are in the process of developing, to the extent practicable, a uniform timber appraisal system. The two agencies are currently working out the details of such a system. The appraisal elements being considered include end product realization values, logging and manufacturing costs, and the margin for profit and risk. By July 1967 we plan to have an appraisal system developed that incorporates the uniform measures that appear practical. It is planned that changes adopted will be placed in effect during the following fiscal year, i.e. by July 1, 1968. Proposed changes will be discussed with interested public and industry groups, and all recommendations will be considered before changes in the present system are finally made. The Bureau proposes, after review, to use the results of the new lumber and plywood recovery studies in the Douglas fir region, and to replace the valuation factor method of dividing the conversion return with the profit ratio method. There are many who have challenged our present system of splitting the conversion return 50 - 50 for stumpage and profit and risk. Consistent with what the Forest Service does now, of course, would be to allow a percentage of the costs as the margin for profit and risk. Another possibility is determining the profit and risk estimate by a percentage of product selling price.

Bidding

Both the Bureau and the Forest Service agree that timber sale methods and procedures should provide bidding opportunity in a healthy competitive environment. This recognizes the need for timber in

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dependent communities and of a procedure for industry in those communities to meet outside competition. Since the main issue seems to be the one-bid sales when viewed in the light of relative high average overbids throughout the Northwest, we need to know the reasons for one-bid sales. Maybe we cannot find out *all* the reasons. I doubt if anyone can, but we intend to learn some of them. A study is being planned with an objective of accomplishing this purpose. Some of you may be asked to participate or to supply data for this study. No changes in bidding methods are under consideration at this time, and probably none will be considered until the study is complete.

Measurements

We recognize the tremendous undertaking in attempting to develop a uniform measurement system. Nevertheless, we believe there is a need to establish a system of measuring that will provide comparability in data for both land managing and timber using groups. We know of present differences; for instance, in the Pacific Northwest both agencies use the Scribner rule. For the same tract of timber, however, board foot volume, if measured by each, could differ considerably.

We have some general ideas on the best way to meet the objective. We have already started to review the problem in the Pacific Northwest Forest and Range Experiment Station. But as mentioned above this is a "big job." It will take time. A system development or change will *not* take place in a relatively short time. *No* time schedule has been set on the overall objective.

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Transaction Evidence

Both the Bureau and the Forest Service plan to evaluate bidding experience as a possible means to detect situations in which appraisals do not appear to be providing a fair return to the Federal Government. In our analytical appraisal approach, marked changes in end product values and industry practices are likely to cause shifts in bid levels. The objective of using bidding experiences would be to minimize the time lag in modifying appraisals to reflect these changes. When the variance between appraisal level and bid level maintains a significant gap for some predetermined period *and* there are no major indicators to suggest that the gap would decrease, an intensive review of appraisal data and methods should be made. What we have told the Bureau of the Budget we would do is to take a quick, hard look at the factors affecting the appraisal system whenever this situation occurs.

To summarize where we stand and where we are going in the area of timber sale and appraisal policies and procedures:

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1. Agreements and executive direction has called for uniformity, to the extent possible, between us and the Forest Service.
2. A series of events has led us and the Forest Service into a detailed study and analysis of appraisal and sales procedures.
3. Areas have been identified in which certain practices and procedures can be made more uniform. The details involved are now being worked out.
4. A plan for uniform practices between the two agencies is being formulated and should be completed by July 1, 1967.
5. Any adjustments that are adopted are scheduled for implementing by July 1, 1968.

For those of you who are from western Oregon, you can readily see what is ahead for you. Others of you can see certain of these issues, although not having immediate impact, will significantly affect your programs in the future. Remember, these issues have many details left to be worked out. You can anticipate future developments, and perhaps you will be called on for assistance.

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PROTECTION

by

Leon R. Nadeau
Chief, Resource Protection Staff

For the past two days you have been hearing such terms as multiple use, PPBS, inputs, outputs, benefit-cost relationships, demands for resources, short term and long term programs, and resource values as they relate to the complicated fields of forest land management. You should now have a clear understanding of the meaning of these terms and their application. As a result, you should be agreeable if I avoid their overuse and talk lumberjack for a while.

Any forest land management program must include resource protection or suffer the consequences. Protection has been likened to insurance for management programs. There are some differences when government lands are involved. The values and investments are there but there is no compensation when public forest land resources are damaged or destroyed. You simply start over at government expense.

Resource protection is truly an across-the-board service function. It cuts across all of the resource management activities and becomes intricately involved in programming and administration. The objectives of resource protection are manyfold.

Forest land resources are protected to insure their perpetuation and to support management programs.

First	Protection guards forest land and resources against damage or loss from insects, disease, fire, theft, and unauthorized occupancy.
Second	Protection enforces the laws of the land pertaining to the resources of the forest and helps to assure just compensation to the government for their use.
Third	Enforcement of natural resource protection laws helps to encourage the public to obtain proper authorization for the use of forest resources.

Resource protection is carried on by management concurrently with other land and resource uses and activities. Levels of protection are determined by the values involved and established resource management goals and objectives. Lands and resources derive their

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values from the demands of people and are protected to be used by people. In some instances, it becomes necessary to protect certain forest land resources against people themselves. We will talk more about this later.

The protection of forest resources has not come about accidentally. It has taken many years for the American people to develop the present strong public opinion favoring protection. Congress, recognizing the social and economic benefits to be derived, has legislated a national resource protection policy and each year appropriates large sums of federal money to help with the protection program on a national scale. Your protection efforts on your district or area contribute to this national program.

Other speakers on this program have stressed the values of forest lands for other than timber production. Until recently, some of these have been latent or potential values, neither much recognized nor respected by some forest managers and even less by forest users. Timber production will always be a major use of most of the higher quality forest lands. However, other use values are rising due to people pressure and will continue to change the comparative relationships between competing forest uses. This will be especially true of the lower quality or marginal forest lands, many of which have already been dedicated to watershed and recreational uses primarily. Public demands for pure water, open space, and recreational opportunities will force changes in land use which adversely affect these interests. Some of the problems facing management can be solved by changes in standards and practices. In any event, total protection costs will have increased, while on-site income-producing values may have been reduced.

Forest management practices in the past, whether proper or improper, have tended to increase protection needs, particularly fire protection. Accumulations of logging slash and forest reproduction greatly increase the fire hazard. Protection from fire itself has in some areas allowed accumulations of ground fuels to build up to the point where now any fire during dry weather is a potential conflagration capable of completely destroying second growth commercial forest stands.

Let us discuss briefly each of the various categories of protection involved in your forest land management programs and see if some interrelationships can be identified. Each has its primary objective and its side benefits or detriments to other forest land uses. To start off with let's assume acceptance of the principle that multiple forest land use does not necessarily mean that all uses will be found on all forest lands or that all uses will ever be practiced to the same degree of intensity on each acre of forest land.

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First, let's talk a little about forest insects. Entomologists tell us that more timber is damaged or killed each year by forest insects than by forest fires. In some cases this damage is done by heavy concentrations or infestations of insects. However, most of it is done a little here and a little there by numerous species of indigenous and introduced forest pests.

Good forest management requires that something be done to control destructive forest insects. Consequently, highly developed techniques and procedures have evolved and great strides have been made with aerial and ground application of insecticides.

Then something happened. Someone discovered that hydrocarbons used in forest pest control also killed honey bees, fish, song birds, and upland game birds, and affected big game animals and maybe even people. Then the roof caved in. Why? Because too much emphasis was placed on the growing of trees and too little on the protection and perpetuation of other forest land resources.

Forest insect control has suffered a serious setback. However, what happened triggered an upsurge in pesticide research and presently several less objectionable pesticides are being tested with good results. Biological controls are also being explored which may reduce the need for chemicals. Road systems being developed for logging purposes today will provide access for salvage tomorrow when insect damage is observed in the forest. The forest manager has a real challenge before him in coping with ever-increasing destructive insects, steadily rising control costs, and an apprehensive, multifaceted public.

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Resenting hindrances to pest control programs will do little to solve the problem. A constructive approach based on science which will produce the best forest insect control results with the least detriment to other forest resources and their enjoyment at a justifiable cost is essential. A multiple approach, a truly management-oriented approach designed for specific problems, may be the answer. In any event, hindsight indicates that foresight is needed to broaden present concepts of insect control in forest protection.

Forest disease caused mostly by fungus is another source of major forest losses. Most such losses involve individual or small groups of trees. Some, such as Dutch elm disease and white pine blister rust, cover wide regions of the country and have caused damage totaling many millions of dollars. Much research has been done to develop control techniques and practices, and many of the decisions regarding this phase of forest protection have already been made. However, intensification of management and increased public interest

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in forest lands will test the forest manager's ability to cope with forest disease problems. Again, relative values and competing uses will weigh heavily in arriving at judgments concerning protection practices.

Selective logging and other silvicultural practices designed to convert old growth stands to thrifty young growth stands usually increase resistance to forest diseases. At the same time, certain species of wildlife dependent upon old growth forest trees for habitat are seriously affected and in some instances are becoming extinct except for lands set aside as parks and wilderness areas. Present economics tend to defend current management practices. However, this does little to reduce the sentimentality of certain public groups. To localize the discussion a bit, there is still considerable argument as to whether snags should be felled in the interest of fire prevention or allowed to stand in the interest of wildlife protection.

Many of you are familiar with the term trespass but how about timber trespass? How many have worked on occupancy trespass? How many on grazing, minerals, antiquities, unauthorized fences, or agricultural trespass cases?

Here is a protection area where people are the primary subjects. The libraries are stacked with law books and regulations designed to cope with the various and sundry kinds of trespass. If people would behave themselves there would be no trespass protection problem. This would be an ideal situation but is about as likely to happen in regard to forest land trespass as it is with regard to bank robberies and homicides.

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An ideal trespass protection program would be an effective trespass prevention program. Some day an adequately staffed forest management unit might have just that. To accomplish this will require rather complete knowledge of the land and resources and human behavior involved and what's going on out there from day to day. Such a program should be fully integrated with management and will require alert, trained field men capable and willing to do a complete job. We are told that in some European countries, a forester is assigned a limited area of forest land for which he is fully responsible for all forest land and resource development and use. We are a long way from the European intensity of management in this country, but are tending toward the same kind of management, not only of the timber but all of the resources on the land.

Speaking of European forestry, I'll bet Ole Oleson of Norway or Heine Hamberger of Germany wouldn't believe it if we told them we are still processing trespass cases that are more than 15 years old! Or that we have known trespasses that are not reported because we're too busy selling our wares or answering the public to take action on them.

Protection from trespass must be accepted as a part of management. No resource management program can be orderly so long as the public is permitted to disrupt it by unauthorized occupancy or use. Furthermore, if trespass could be prevented available manpower could be assigned to more productive work than processing trespass papers. The objective should be to clear out the backlog of existing trespass cases of whatever kind; get the program on a pipeline basis and then strive to reduce the occurrence of trespass to an absolute minimum through trespass prevention.

Fire control is the "glamour girl" of the protection program. It makes more smoke and gets more publicity than most other activities in government programs. The loss of life and property from wildfire in the United States is tremendous. Acreage losses may be lower than in earlier years but the costs are much greater and the values of resources damaged or destroyed are much higher.

Publicity campaigns are directed toward fire prevention. This is the key to keeping down both costs and losses. Of the more than 100,000 reportable wildfires which occur annually in the United States approximately 90% are man caused. On this basis, certainly the fire prevention program is still too limited! In the western United States, the percentage of man caused fires is around 40 to 50%. This lower rate is probably due more to the high incidence of lightning fires in the drier climate than to human behavior.

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Wildfires occur in all vegetative types. Usually the greatest losses from wildfire occur on forest lands where multiple values are high. Uncontrolled fire knows no boundaries and respects no titles or classifications. It is a demon of multiple destruction that can wipe out years of patient, painstaking multiple use management in a matter of hours. Worse yet, our very systems of management contribute to the occurrence of fires in spite of such prevention efforts as slash disposal and roadside clean-up. After the first cutting cycle both hazard and risk are much greater than during the time the land supported virgin forests. Improved access, of course, facilitates protection efforts. It also makes it possible for more people to visit the forests for multiple reasons, which was not the case prior to logging. If you don't believe the above is true take a good look at your contract fire protection costs for the past 20 years. Some of them are three times what they were 20 years ago and this is not all attributable to the cost of living index.

Repeatedly we hear the statement made that the time is rapidly approaching when we can no longer close our forests to the public on the grounds of fire protection. This comes from both private and public officials. Eventually we're going to have to let them in, in spite of the risk, and do what we can to prevent wildfires from starting or

from developing into a major conflagration when they do start. We should be thinking along this line in our planning for protection. We must define our forest management and use objectives and design facilities to accommodate the public while at the same time strengthening prevention in those areas where it is most needed.

Currently we are hearing more and more about air pollution and its hazards to health, climate, air transportation, etc. Who knows what the near future may bring if we are prevented from burning logging slash or conducting prescribed burning to reduce forest fuels or, outside the forest, to improve grazing lands for livestock and wildlife use? Here we have the element of legislation entering the picture to preclude legitimate burning during the safe season and increased pressure to keep down wildfires during the fire season. What will this do to the several uses of forest lands and the forest management program? We're presently experiencing a "wait and see" period, but don't be too surprised if in a few years we are faced with some very rigid burning restrictions.

Superimposed over all of this is the ever-present problem of budgets and finance. How will we go about paying for more fire protection on our forest lands? Should we raise the price of recreation stickers to put more of the cost on those who use the forests or expect Congress to pick up the tab? Presently the BLM is making its first attempt at a systematic approach to measuring fire protection needs on the public lands. The system takes into account all uses of the land in arriving at a resource value classification. Based on these values, fire occurrence records, and travel time, organization, facilities and equipment will be recommended to meet predetermined protection standards. Once the initial planning has been completed and a Bureau fire protection program established on a need basis, the system will be incorporated into the overall program system to permit periodic adjustments to accommodate changes in objectives or requirements. Besides serving as a basis for programming and budget purposes, the planning results will supply valuable information to land managers for use in their district programs. We hope you all realize the significance of this undertaking and expect you to give it your full support.

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People problems were mentioned above as a separate protection item. People are the crux of most of the protection problem. However, this is a unique people problem referred to us in higher circles as "visitor protection." Up to now this has not been too much of a problem on public lands since the law in effect says "Enter at your own risk."

More recently, the Bureau has embarked on road construction, recreation, and various building programs that place it in the family circle of those agencies subject to tort claims if people visiting or using

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these developments should be injured in any way that might be adjudged negligence on the part of the Bureau. This, too, is a preventive or safety program designed to make it as nearly impossible for people to hurt themselves as is reasonable. Visitor protection is designed into structures, and warning signs are placed to make visits to BLM developments both safe and pleasant.

There are other kinds of people problems too. Keeping them from literally tramping out camping and picnic areas built for their enjoyment is one such problem. This can be prevented somewhat by proper planning and design of facilities and traffic direction. The malicious damaging or destruction of government property poses a real protection problem. This requires a policing job which has been hampered by our not having authority to make arrests for misdemeanors. Legislation presently before Congress would extend the authority which was granted to the Forest Service and National Park Service in 1904, to all lands administered by the Secretary of the Interior. Authority would be delegated to selected individuals who may make arrests for misdemeanors and take the violator before a local commissioner or magistrate for appropriate action under the penal provisions of the applicable act of Congress. In a few years some of you may be taking training for an entirely new kind of protection not heretofore within the Bureau's authority.

There is also legislation before Congress which will prohibit littering and the dumping of waste materials on the public lands. This will help forest managers to keep their forests neat and clean. People keep upsetting management by selecting out parcels of public lands for various and sundry purposes. Controlling this problem is not essentially a protection problem but it is a people problem. The Classification and Multiple Use Act and the work of the Public Land Law Review Commission are expected to have the effect of securing land tenure to a large degree and will thereby stabilize forest land management programs.

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At this point in time it is safe to make some prognostications regarding the future. Forest protection problems will increase, will become more complicated, will cost the government more to finance; the timber growing specialist will become staff to a general forest manager; and good old John Q. Public will be breathing down his collar for more and more attention and a larger share of the good life of being privileged to enjoy the forest with the rest of you lucky people.

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PROGRAM DEVELOPMENT

by

Robert A. Jones
Chief, Office of Program Development

Guide to Decisions

This has certainly been a most interesting and provocative conference. I appreciate the invitation and opportunity to meet with you and to exchange ideas. As you recall the pattern of the conference, the first several speakers--through Bill Duerr--talked about multiple use of forested lands generally. The next group of speakers talked about specific portions of this management and the interrelationships were well developed. Now I have the first crack at putting it all back together again.

My topic - Guide to Decisions - is both awesome and presumptive. I'm not about to try to tell this group how to make decisions. The only simple, straightforward, pat, and unchanging guideline I can think of is "Do your best to make the right decision" -- and with that I might as well sit down.

But I won't--for two reasons. I've prepared a short paper and re-prepared it several times since Monday morning, and I'd hate to think of wasting all that effort. Also, I have somewhat over an hour allotted to me, and if you get into questions like what is PPBS all about I'd just as soon have a shortened question and discussion period.

Just how do we do our best to make the right decision? Let's stipulate at the outset that at least we all have this common motive. I don't know a simple answer to this question; if anyone does I hope they will let us all know what it is.

Thinking about this, it seems to me that there are at least three things we can do to at least try to make the right decision:

(1) Plan the time necessary to consider the data.

(2) Make sure you have all the needed and relevant information.

(3) Think.

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I plan to use these three suggestions as a framework for my presentation.

We are highly decentralized and have a complex job. There is no way that I know of to provide a simple yardstick guide of some sort, which can be mechanically followed toward good program decisions.

Note that I said program decisions, not technical decisions. Let me define these terms right away, since recognizing the difference is critical to recognizing your complementary but very different roles as technicians and as multiple use program managers.

Technical Decisions

We are reasonably familiar and comfortable with technical decisions. These are the responsibility of staff specialists--engineers, range conservationists, foresters, wildlife specialists, etc., at all levels of the Bureau. We were trained in school to make technical decisions--that certain forest land of a specific type and age class will produce varying amounts of merchantable timber under alternative levels of management--that a certain soil will erode in a particular manner under certain specific conditions--and that a specific practice will retard this erosion--that a certain type of recreation development will permit the smoothest traffic flow, or will best blend into the topography, and will cost a specific amount.

I could go on all morning reciting the various types of technical decisions we make every day. Our manual, in sections 2000 through 9000, is full of guidelines for this type of decision.

Program Decisions

The more difficult type of decision, I think, is a program or management decision. This is the job of the multiple use line manager, from the Area Manager on up to the Director. It is the focal point of the multiple use management process and is being stressed at this conference. This is the type of decision I plan to talk about.

Program decisions are concerned with alternative program directions, both in terms of alternative uses of land and alternative uses of available funds. Which watershed protection project should be started next? How big should the forestry program be in District A versus District B, or in the O&C versus PD? How much of our available budget ceiling should be allocated to recreation versus timber? What mix should we attempt between cattle and elk? These are program decisions. Technical decisions must be made first to help the program decision maker consider his alternatives, but must not dictate the program decision. The program decision maker can hardly decide to preserve a

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scenic strip if a technician has not already identified and described the possibility, but just because it has been identified as a possibility does not mean he has to preserve it.

This brings us to the crux of the multiple use problem--if I can use that phrase. We have been having a friendly discussion with Archie and his staff over this point. It revolves around the fact that at the district level we often have the same man wearing two hats. He may be a professional technician, making technical decisions regarding the opportunity and cost for pursuing some specific program alternative, and at the same time he may be an area manager, district manager, or staff in support of the district manager, making or recommending program decisions.

Now the fact that in a forested area he may be a forester by profession probably reflects good assignment of manpower, but is beside the point. The point is that he relies on his forestry technical training and guidelines to make a technical decision about the costs and benefits of a timber management program alternative--but when he puts on his area or district manager hat to make a program decision he better check to make sure he has the right hat on--and make sure that the other technicians--watershed, recreation, wildlife, etc. have had their say. He makes a program decision as a professional land manager--which implies sufficient knowledge of watershed, minerals, recreation, and wildlife to equate their values with timber. And if, as a professional forester, he can in fact do this--more power to the forestry profession!

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Let's not kid ourselves into thinking this transition is easy--if a man, as a well qualified technician, puts a lot of thought into developing what he thinks is a technically feasible and pretty darn good program proposal, he gets a little disgusted with all this monkey business about alternatives, output, cost and benefit, before deciding to implement his program proposal. In other words, he has difficulty putting on his area or district manager hat. But this is what multiple use - land use planning, program planning and PPBS are all about. It won't go away, so we might as well face it--and that is a principal reason for this conference.

The opening statements by Director Rasmussem and Associate Director Crow clearly laid this out when they mentioned increasing demands on public lands; a mandate for multiple-use management; a shift from unilateral forest management, range management, recreation management, etc.; and a need for quantification of output. Each of the major resource categories has been discussed in detail. Now we are to consider the decision-making function.

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Plan for Decisions

First let's go back to the first suggestion that I listed at the outset of this presentation--"plan the time necessary to consider the data."

I am sure that all of you, if you will think back over the program decisions you made this past year, can find many examples of drawn out, time-consuming, and detailed consideration given to the technical estimate phase and last minute superficial attention to the program decision-making phase. Too often I think we simply decide it like we did last year--such as the mix of new employees hired.

As program decision makers, or as staff in support of program decision makers, I urge you to think about the characteristics of your program decisions--and allocate the time necessary to do them justice. You might ask these questions to help make the proper allocation of time:

(1) Importance: How important is the decision? The importance of a program decision should be measured by the size of potential gain or loss, and not the complexity of technology involved. The decision whether or not to increase recreation opportunities is more important when valuable timber production potential is foregone, and major public support and opposition both exist, than when costs are minimal and public need and support is clear and obvious, but the recreation technology is unique and complex.

(2) Frequency: How frequently do you make the same type of program decisions? Decisions that must be made daily or weekly obviously warrant considerable effort in advance preparation of guidelines, data assemblage, etc., whereas decisions that are made very infrequently may be most efficiently handled on an ad hoc basis. Many program decisions such as the use of certain protective stipulations are not individually of a high order of importance but because they are repetitive their cumulative effect is important.

(3) Imminence: How soon must a program decision be made? The penalty of waiting is not the same for all program decisions. When the cost of waiting is low it may be desirable to wait until more information is available before committing resources to a particular line of action. In other instances it is important to act promptly. This is a significant question for us in BLM since our range and forestry inventories and data are usually so much superior to our wildlife, recreation, and minerals data.

(4) Revocability: Can you change the program decision if it later appears wrong? Once made some program decisions can be revoked only at considerable cost, if at all. Harvesting timber is a good example. On the other hand, Glen Fulcher tells us that the level of livestock use established in an allotment is revocable and can be changed quite easily.

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(5) Available Alternatives: How many alternatives should be examined? Some situations present a multitude of possible choices for program decision-making; others may provide only two. When a wide range of choices is available, a system or predetermined program standards must be used to eliminate the less likely choices and concentrate on a few workable choices for careful study.

Make Sure You Have the Relevant Information

My second suggestion was "make sure you have all the needed and relevant information."

This is complex, since how do we determine whether data is or is not relevant? I find it useful at this point to divide relevant data for program decision-making into three major classes:

(1) Data related to inventory, or program opportunities, and their cost and output or benefit.

(2) Data related to need or demand for the output or benefit.

(3) Data related to public, Federal Government, and Bureau goals, objectives, and decision criteria.

You don't necessarily use equal quantities of each.

Inventory

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This class of data presents a paradox. We have been collecting inventory data for years, but in connection with our individual programs. We know a great deal about timber production potential, and we know something about recreation potential. But how much do we know about recreation potential that would be enhanced or damaged by realizing the timber potential?

Questions like this raise many technical and research problems--the product-product relationships as economists call them. And we certainly don't have all the answers. In fact, we seem to increase our inventory of unanswered questions faster than our inventory of available data-- and it will probably always be like this.

However, we are beginning to isolate the types of data needed to make program decisions under multiple use and PPBS principles--and we find our existing inventories lacking.

First, we need to know where we are now--as Glen pointed out--the present levels of resource product output--how many AUM's, board feet and recreation visitor days are now being annually produced?

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At what cost? What problems are occurring? Are the resources in good, fair, or poor condition? Are conditions and output levels declining or increasing?

And second, we need to know, in incremental form, the potentials, the opportunities for changing this level of production, and the costs in terms of both other production foregone and budget dollars required.

Problems associated with these two questions and new developments from a technology point-of-view have been extensively discussed by the preceding speakers. I would like to reemphasize just three new departures.

At the Director's level we have been making SWAG type estimates of these production levels, cost, and opportunities, for use in our PPBS program analyses for submission to the Department. This has involved a great deal of thought and negotiation over the best way to measure the Bureau's output and to integrate this into the Department's program structure. It has involved a great deal of ingenuity and effort to best use all of our available data sources, and I believe it has generated more thought about and inquiry into the rationale of our program than had occurred prior to PPBS. In fact, I think this has been the major benefit of PPBS up to this point. We have purposely held this process at the Director's level until the expected evolutionary changes could be made in Departmental structure and other details. I cannot predict when the field will be more heavily involved.

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At the field level, primarily to support the multiple use management requirement and as an immediately operational tool, you are working on District Summaries and Planning Unit Resource Analyses. I don't have to dwell on the components of these documents since you have all been involved in the orientation meetings, but I do mention them at this point to place them in perspective. Their value is, of course, directly proportional to the time and effort you put into their preparation. In more of a research environment, the Forestry Staff and Dr. Duerr have been working on the "Guides to Management" project, which appears to have considerable potential.

Need and Demand

Developing and using data relative to need and demand is a new departure for many areas of the Bureau's program. The first question raised by this process is need or demand for what? This has been resolved by the output list developed for the Department PPB Structure and the summary list used in the District Summary instructions. The list is pretty much the traditional commodity list of land for development, AUM's of livestock forage, board or cubic feet of timber, recreation visitor days, water, both quality and quantity, minerals, etc. I won't go

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into these in detail except to point out that the need or demand measures must be those measures necessary to identify people's needs. We say there is a need for improving range condition--and there may well be such a need. But the need or demand measurement most useful for program decision-making purposes, such as how fast to develop and install allotment management plans, is livestock AUM's, water quality improvement, or wildlife supported recreation visitor days, because we can relate these measurements to anticipated local, regional, and national population trends and requirements, and to anticipated economic impact. This is the difference between a technical decision that range is in declining condition and that certain program investments would reverse this trend and save or increase these various outputs, and a program decision whether we need the output badly enough to warrant the program expense.

My point is that the program decision maker must have some knowledge of the comparative need and demand for the various resource and land products, if he is to make knowledgeable program decisions. To be comparable, these data must be based upon common assumptions and cover a common time span.

We are involved in three principal efforts at this time to help assemble need and demand data for the program decision makers in BLM. In Washington, as part of our PPBS effort, we are assembling on a national basis the best possible estimates from available data, and using these in our Bureau-wide program decision making process for FY 68 and 69. At the state level you have assembled your first generation Economic Profiles, also using available data, for use in program decision-making at the state and district level.

The most potentially significant work is being done at the multi-state level, as part of the Type I River Basin Framework Studies effort. The Economic Research Service and the Office of Business Economics are preparing economic base studies, going back to basic data insofar as possible. We are most optimistic about the utility of these studies, and are very much concerned that they use commodity measures and assumptions useful to BLM.

Before leaving this subject, just one comment on the difference between need and demand. While used together, these terms are not synonymous. Need is a social term, implying some sort of aggregate public need for some commodity, which is usually provided at something other than fair market value (e.g. recreation visitor days). Demand is actually a curve, or schedule, indicating the amount of a commodity that would be taken at various price levels. This is most useful when the commodity, such as timber or land, is transferred under fair market value principles. We must distinguish between these indicators when using them to make program decisions.

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Goals-Objectives-Decision Criteria

Let's assume that our program decision maker has before him the best possible understanding of both program opportunities and their cost, and public needs and demands for the output. Is he ready to make a program decision? No. He does not yet have all the needed relevant data. He needs some idea of what the Bureau's goals, objectives, and decision criteria are.

This is a most difficult area in any agency as complex and far flung as ours. Top management often has good reason for not being very precise about goals, objectives, and decision criteria. Staying loose gives them more flexibility when dealing with uncertain legislative or Secretarial direction.

How many of us can think of situations where the goals and objectives were very high sounding, such as "in the public interest," or "greatest good for the greatest number," and the decision criteria were "don't rock the boat," or "keep the Congressional delegation happy"? This may be a little harsh but it is intended to make a point. We never have had, and I don't think we ever will have the crystal clear, unequivocal goals, objectives, and decision criteria that will permit any program decision maker, with a minimum of effort, to compare his program opportunities and output needs and through some mysterious calculation come up with the correct program decision.

But this does not mean that absent such clear guidelines he simply flips a coin, or asks his supervisor. It means he has to think, which is the last of the three suggestions I started with. Program decision-making is hard work. It takes much digging to uncover all the relevant data, and to think through the various program alternatives in a logical and orderly fashion. I know of no substitute. The program decision maker is carrying the two brief cases Bill Duerr mentioned.

The problem of getting top management to express their goals, objectives and decision criteria in as precise a fashion as possible, subject to reservation of maneuvering room, has been one of the most fascinating aspects of PPBS. I can tell you that there has been some real thinking and negotiating under way, and there is more to come. In the meantime, we have been attempting to pull the results together and communicate them to you as well as possible, for inclusion in your Program Policy Guide binders. We have issued two documents, the April 1966 General Policy Statement and the November 1966 Program Outlook Guide, for your study and use. The Program Outlook Guide will be updated next fall to reflect results of the current cycle. You are right now involved, or should be, in the preparation of District Program Guides, using the Economic Profile and Program Outlook Guide data. We are, at this time, working on a zoning technique, comparable

to the Forest Service system but without the primary use concept, which can be applied to planning units after Unit Resource Analysis data and District Program Guides are available. Turc and I mentioned this briefly yesterday. It would constitute the most detailed on-the-ground form of land use program guidance for the area manager. It would be the vehicle for stating the objectives of a range allotment. It would not provide detailed guidance as to program size and would not imply fund commitments. It would be sufficiently general to use in public discussions.

Our major problem is that we have a multiplicity of objectives, which are not always compatible. They include the traditional conservationist objective of "preserving our resource base." But since, in many instances, we can do more than this, they include production targets and objectives--production for many purposes, such as stabilizing dependent industries, helping meet national needs for products, and helping support local and regional economies.

However, since we can't fully meet all of these objectives with our available budget, we get down to the hard program decision-making--how do we use our available budget increase--what is our final test or criteria?

This test includes political, social, and economic standards--and properly so. And many times the standards cannot be precisely slated--much as we would like to. The program decision makers' judgment is always the final test.

The economic standards or test can be discussed, since the principles of economics don't change--they just get discovered! These four are often mentioned:

(1) The greatest benefit for the least cost

A test which would simultaneously maximize benefit and minimize cost is impossible. Maximum gain is infinitely large, and minimum cost is zero.

If you approach a problem with the intention of using such a standard you are confused to begin with; and I can assure you your confusion will increase.

(2) Benefit-Cost

Another very commonly misused standard is the ratio of benefits to costs. To maximize the ratio of benefits to costs may be a plausible test at first glance, but it allows the magnitude of the benefit or the cost to roam at will. Using the ratio by itself may lead to

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extreme solutions, such as concluding that the best program decision might be to limit BLM operations to straight timber production on the O&C. The only way it is really useful is when either the total benefit or total cost size is fixed, and the objective is to find a program within that constraint, having the highest ratio of benefit to cost.

(3) Least cost to accomplish an objective

This is a very good standard when the objective is clearly stated such as reducing fire burn to a specific average annual acreage, and there is no budget restraint--a rare situation. It is quite useful as an early consideration in setting long term program goals.

(4) Maximum net gains for a given budget and resource base

This is the most generally useful test we know of, and is the economic standard we try to use in BLM as we make program decisions. It could also be stated as "making the most out of what we have." This is what we mean by multiple use. A difficult requirement of using this standard precisely is that costs and benefits be commensurable. Also total costs and total benefits (plus and minus effects) must be included. This requires us to attempt to estimate resource value foregone costs as well as budget costs. In other words, the cost of a recreation development in a forested area is the development and O&M cost plus the merchantable timber value foregone.

I believe you would agree that "making the most of what we have" seems the best criteria from a practical point of view. It's essentially the same as the benefit-cost test with a specified budget total and a requirement for including all costs. However, we simply do not have the data and technology to apply this test precisely. In lieu of such precision, we have to describe the program alternatives as well as possible, and bring them to the program decision makers for their value judgments--that's what they get paid for. You did get a taste of this as you prepared "B" line packages for the FY 69 program submission.

Conclusion

In conclusion I repeat my three opening suggestions:

(1) Plan the time necessary to consider the data.

In other words, don't present the SD or DM with a very complex program decision, on which you have labored for weeks to make the technical estimates, and expect a decision in time to make the evening mail. A good decision under these circumstances is an accident.

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(2) Make sure you have all the needed and relevant information.

Resist the temptation to make a program decision based upon a timber inventory alone, when you haven't heard from the recreation or watershed specialists, and haven't analyzed all the available goal, objective, and decision criteria guidelines. We are a multiple use land management agency, and I can think of no good reason why we can't take the time to obtain a balanced picture of all resource opportunities and needs before making irrevocable commitments.

(3) Think.

In other words, study the data, study the stated goals, objectives, decision criteria, and think--then think some more.

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P.P.

OPERATIONS

by

Edwin Zaidlicz
Chief, Division of Resource Program Management

The use of the videotape system as a training aid is, in my opinion, one of the major breakthroughs in improving our operations.

This is a first for the BLM. I'd like to utilize it for another first. You've all heard Rex Morgan's classic story of Cecil the bugling bull. It was long accepted that Rex couldn't tell it if he wasn't oiled. May I present to you documentary evidence that this is not true.

Being the third from the last speaker after a 3-day session presents certain problems. Any prepared speech you have has already been chopped to hell by the preceding speakers. You don't have the privilege of summarization because that's the responsibility of your wind-up man. So there's little left to do but weave in and out of the material and data covered earlier, and try not to be distracted by the sea of violently red eyeballs.

Al Thompson drafted a fine talk for me but I am forced to scrap much of it for the aforementioned reason.

I find talking with BLMers, especially foresters, very stimulating and enjoyable except in situations where ladies are present or when I'm being taped. Guy assures me that if I revert to the use of idiomatic expressions peculiar to a Pollack from Souse Chicago these slips can be edited out.

I would like to talk with you on the Division of our organization that I represent--what we do--who does it--what our present system of programming is--how it works at the National level--some of its deficiencies--what our basic needs are--and then wind up with what is on the immediate horizon. Rest easy--I'm not going into the details of form completion or the complexities of analyzing ADP printouts. The very able speakers preceding me have pretty much exhausted the multiple use aspects of management so I'll try not to be repetitious.

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On May 18, 1964, the Washington Office reorganization proposed by Dr. Shipman and his associates formally went into effect. As a result of this reorganization, the Division of Resource Program Management was formed. The Division is directly responsible to the Assistant Director, Resource Management, Gene Zumwalt.

The Division of Resource Program Management is concerned with identifying and defining the various categories of resource planning information and work units required to complement the planning and financial systems of the Bureau. In its area of responsibility, subject to coordination by the Office of Program Development (Bob Jones) and the Division of Financial Management (Bob Cummins), it has primary responsibility for formulating and communicating to other Bureau offices the Director's program goals, priorities, and limitations, so that management plans and budget estimates can be developed in an orderly, unified, and purposeful manner. It also reviews and recommends action on field annual operating budget proposals. It is responsible for providing direction and assistance within its area of responsibility to field offices on matters pertaining to resource management planning and overall program needs and problems. It compares the rates of physical accomplishments and obligation of funds with the planned rates. It assesses resource program effectiveness and performance in field offices. It is responsible for informing the field of significant trends and events directly related to resource management programs and for identifying needs for policy, regulatory and legislative change within its area of responsibility. In summary, we are in *operations* - as most of you are.

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Division Internal Assignments and Responsibilities

At the end of each fiscal year we provide the Directorate with an analysis of your accomplishments. Last February we updated assignments and responsibilities to reflect RPM organizational modifications and personnel changes. The functional organization will be maintained to a lesser degree in the future. I am particularly gratified by Bill Duerr's discussion. We, in effect, have espoused his basic principle. A broader overall resource management involvement will be sought. In order to maintain a current understanding of problems and progress, close liaison with the technical staffs will continue. All staff members will work on a Bureau-wide geographic basis. Individual assignments and responsibilities are as follows.

Generalist Bill Leavell serves as the assistant to the Division Chief in all matters affecting the Division.

Generalist Roger McCormack functions as an assistant to the Division Chief in providing overall guidance of the analyses and evaluations of the resource program plans and progress. He also represents the Division on matters involving PPBS.

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We have two branches in RPM - Resource Products and Public Services. The Resource Products Branch, directed by Generalist Ed Hoffman, is responsible for forest management, range management, and soil and watershed conservation. The specialists are Ross A. Youngblood and Alan P. Thomson, forestry; Donald I. Bailey, range; Clair M. Whitlock and John N. Russiff, soil and watershed; and Elwin H. Price as general backup.

The Public Services Branch, directed by Generalist Lowell Udy, is responsible for protection, wildlife, recreation, construction, maintenance, cadastral surveying, and Job Corps. The specialists are Gerald G. Wright, construction and engineering; Louis A. Boll, wildlife; Clayton E. Anderson, recreation; John F. Fields, protection; and Herb Cobleigh as general backup.

Both branches are heavily involved in the following work:

1. Budgets, including program advices, program directives, and budget estimates justifications.

2. Program management, including PPBS, annual work plans, progress analysis and program adjustments.

3. Program inspection and review.

4. Operational inquiries from Bureau field offices, Congressional offices and the public.

5. And other duties as assigned. (At the D.C. level this last point has been known to break up happy homes.)

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In addition, examples of specific forest management assignments include: timber sale contract problems, condemnations, emergency matters--blowdown, flood damage, fire rehabilitation, and overview of O&C matters.

In my opinion, we are extremely fortunate in being blessed with such superior people in this division.

Programming - Present system

Permit me to go into history a little. When I got to Washington six years ago each functional activity worked on the "survival of the fittest" principle. We were--as a Bureau--an extremely loose confederation of range specialists, foresters, lands men, etc. If you had to gouge your buddies' programs a little to build yours, this was considered not only ethical but highly desirable. This we have largely overcome.

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What are the mechanics of our present system? After you boys submit your programs--based on a state consolidation--to Washington--programs that are supposed to reflect the advices we gave you earlier and also broad aspects of the Director's Program Outlook Guide mentioned earlier by Bob Jones--we have our subject specialists review and consolidate them. May I stress at this point that our boys do not write a new program; we rely heavily on your data and estimates in building the Director's program. Unless we have strong evidence that you're royally goofed up, we take what you say. So don't be surprised to see some pristine pearl of wisdom that you've originated spelled out in the Congressional Record. A number of alternatives are then presented to the Directorate. The Director makes his decision based on his reviews and work with the Secretariat. Our boys then begin work on the Estimate, as it's called, in cooperation with the fellows in Division of Financial Management. Here we try to weave in the romance and rationale to impress the Department and the Bureau of the Budget with the worthiness of our proposals. In recent years the reviews made of our Estimates by the Bureau of the Budget have been most exhaustive and detailed. The fight for the dollar and head-count among agencies is highly competitive. The arguments we present must be unshakable. The days of the routine allocation of a historic base of dollars and people are over.

After clearing our Departmental experts, the Director and his principal staff people appear before the Bureau of the Budget examiners to defend the Estimate. It is here that you begin to appreciate how tough the Director's job is. While he may and does call on his staff to respond to specific questions, he carries the bulk of the detailed cross-examination himself. The probing is expert and usually conceived on past performance and adequacy of data. It is here that your accomplishments and proposals can make or break us. After the hearing we get a "mark-up" from the Bureau of the Budget. I'll be damned if I know why they call it a "mark-up." The net "mark-up" reflects national budgetary constraints, the effectiveness of our argument, need to finance new programs, etc.

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Having the Bureau of the Budget mark-up on the Estimate, we go back to the drawing board and build the justification based on the constraints imposed on us. Shortly after the start of the year and after the President's Budget message, the Director is called to appear before the House Subcommittee on Appropriations. As a general rule the members are rather economy-minded and wield a sharp scalpel. It is here that geographic and constituency factors enter the picture. The fact that a certain state failed to meet its timber sale commitment may raise its ugly head. Or the Director may be taken over the coals because a certain road programmed for completion and funded accordingly was not built. No matter how gifted a speaker or conservationist the Director may be, he must have solid facts and accomplishments to

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weather this review. The Congressional committees stress integrity and accomplishment. You may soft-soap them once, but the next time you're dead--very dead!

After the House hearing, the Director and his principal staff appear before the Senate Subcommittee. Normally the atmosphere here is more relaxed and the members more empathetic with program increases. Here again, however, the Director must be backed by solid accomplishment of past promises to have his new ones honored. It is at this point that pet, special write-in projects may appear. Committee members are keenly interested in our programs in their state or district. A write-in project of $50,000 in an area that you had not planned or programmed for can have a profound effect on the overall budget. These are perplexities to the programmer and planner, but they're realities of our budgetary process and we must effectively adjust to them and get the job done. To get that new suit of clothes we may have to agree to a bow tie as well. After all the details are in, you get your directives to build your operating budget on. We give you these commitments on the basis of your earlier submissions to us, as modified by the wishes of the Department, Bureau of the Budget, the House, and the Senate. The perennial question is "How much flexibility do I have for variance from this commitment to reflect the local changes that transpired in the two years since you put the plan on paper or to correct a badly conceived plan to start with?" It varies with the point in the organization structure and activity. At the national level we think in terms of a plus or minus 5% acceptable variance in the unit accomplishments cited in the budget. If we are committed to 140 million board feet of timber sale offerings on the public domain, we may permit California to hit 50 million to cover Idaho's 25 million offering but we want 133 million to 147 million for the 11-state summation and preferably 140 million. We are concerned with work done, not dollars spent! If you can meet your commitment but end up at the end of the year with surplus dollars we won't be adversely affected on our next Congressional go-around. But if you spend all the dollars and man-months and fall short of the accomplishments, we've got some explaining to do.

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Controls

As you know, we have two quarterly reviews to help keep us on target. These have proven extremely effective in bringing our commitments into balance. It works well as a bridging device to cover inadequacies of planning, programming, and execution from a national level. We may hit our 140 million board feet, but if the loggers in eastern Oregon had to settle for 15 million instead of 29 million, while Wyoming got 29 million out instead of 15 million, then Senator Morse is certain to query the Director on the adequacy of his program. May I stress that our concern is with accomplishments, not expenditure of dollars and man months.

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Why is it that our system is deficient? Two factors keep cropping up: time and people. We don't have enough of either. Our plans are thrown together at one point in time, often with inadequate review, etc. Our planning and program efforts must be continuous. We must profit by our mistakes. We are not going to be able to declare a moratorium on regular operations to build a new perfect ultimate plan. Our progress must be evolutionary, not revolutionary. Permit me to illustrate my point. For years we've fought to bring our 1250 Forest Development funds up. We worked them up to the half-million dollar level and now we're falling on our faces. I was appalled to find last Thursday that $70,000 out of a total of about $375,000 would have to be reprogrammed into other deficient activities because we can't use the money effectively. We continually see plans for $60 per acre site improvement plus $70 per acre planting costs on a $60 present net worth site. I don't care how eloquent and sharp the Director may be, he can't sell this. We are going to have to be more imaginative. Our boys are doing this. In the 1969 PPBS presentation our 140 million board foot public domain program will cost 3.2 million dollars for roads, reforestation, etc. but the direct return in dollars is only 1.6 million dollars. Looks lousy, doesn't it--two to one cost benefit ratio. But timber increases in value 25 times between stump and finished product, so we generate a $40 million Gross National Product. Western Oregon alone develops $1,204,000,000 GNP. In total, the BLM timber program produces 82,000 man years of employment. These are crude initial attempts but this is about what we must do to sell our programs.

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What's on the Horizon?

President Johnson recently told Congress that he wants to run an even tighter, more economical and happy Federal ship. He would accomplish this by beefing up the PPB system and he urged Congress to help. The "Happy Federal Ship" refers to additional proposals he will make at some future date to improve pay and working conditions.

Let's talk a little about PPBS. You've all made plans only to see them filed away and left to perplex the historians. We have had the S&W, 20-year plan, Plan 2012, 5-year timber sale plans, etc.

In light of present developments we see that many of them had serious defects--the forecasting covered too long a period, cost data was impossible to identify, manpower requirements were diffused, goals were fuzzy.

Don't get me wrong--they weren't all bad, but we lacked the impetus to break through and get much implemented. I look at PPBS as a real chance for a breakthrough. The program is sponsored by the White House;

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it will have the momentum and we have the choice of getting out in front of the rolling juggernaut or getting slightly squashed.

We have deliberately shielded you fellows from PPBS thus far for two reasons:

1. It needs a thorough shakedown - why give everybody ulcers.

2. We are making gratifying improvements in our present system and we can't risk missing our operational commitments.

Let me read a few key excerpts from Bureau of the Budget Bulletin 66-3 to give you the flavor:

> "A budget is a financial expression of a program plan. Both formal instructions and training materials on budgeting have stressed that setting goals, defining objectives and developing planned programs for achieving these programs are important integral parts of preparing and justifying a budget submission.
>
> "Under present practices, however, program review for decision making has frequently been concentrated within too short a period; objectives of agency programs and activities have too often not been specified with enough clarity and concreteness; accomplishments have not always been specified concretely; alternatives have been insufficiently presented for consideration by top management; in a number of cases the future year costs of present decisions have not been laid out systematically enough; and formalized planning and systems analyses have had too little effect on budget decisions."

The PPB System will help to remedy these shortcomings and should provide more effective information and analyses to assist line managers, the agency head, and the President in judging needs and in deciding on the use of resources and their allocation among competing claims.

BOB Bulletin 66-3 envisions that the overall system will enable an agency to:

1. Make available to top management more concrete and specific data relevant to broad decisions;

2. Spell out more concretely the objectives of government programs;

3. Analyze systematically and present for agency head and Presidential review and decision possible alternative objectives and alternative programs to meet these objectives.

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4. Produce total rather than partial cost estimates of programs. As I said, in our FY 1969 PPBS presentation, total costs to harvest 140 MMbf of public domain timber, reforest nonproductive lands, road construction, etc. amounted to $3.2 million.

5. Evaluate thoroughly and compare the benefits and costs of programs.

6. Present on a multi-year basis the prospective costs and accomplishments of programs.

7. Review analyses on a continuing year-round basis instead of on a crowded schedule to meet budget deadlines.

This gives you the Executive Branch's points of concern. Now let's look at the Congressional side--what are they doing? Do they share this need for accurate quantification in decision making?

Permit me to read excerpts from Senator Spong, Jr. of Virginia in "Your Senator Reports":

> "Three weeks ago the Senate passed a bill to provide the first major overhaul of Congressional Operations in the past 20 years. The Legislative Reorganization Act of 1967 may sound somewhat vague to the average citizen, but its potential benefits for him are tremendous.
>
> "Senator Mike Monroney, D-Okla., who was co-chairman of the joint committee which developed this legislation, introduced the bill in the Senate last January and pushed it through. He deserves the thanks of everyone interested in more efficient government.
>
> "The bill now goes to the House for further consideration and, hopefully, enactment this year.
>
> "While some of the provisions of the bill are relatively minor housekeeping measures, many sections would have direct and considerable impact.
>
> "One of the most important parts of the bill deals with Congress' fiscal control over federal expenditures.
>
> "This section would require government agencies to outline their requests in a more meaningful way in the budget document--when reviewing their proposals Congress could readily tell how much all agencies want to spend in a given program or field and exactly where each agency intends to spend its allotment of the taxpayers' money.

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> "The agencies would also be required to project their anticipated expenditures five years in advance. This feature would enable Congress to review current requests for projects in light of their overall, long-range cost.
>
> "The bill would create a new division in the General Accounting Office to analyze the cost effectiveness studies which the various agencies submit on their programs and to conduct its own independent studies for Congress.
>
> "Under this provision evaluation of a program could be made independently of the agency responsible for administering it.
>
> "Other sections would increase the research capability of the Legislative Reference Service, so Congress could make better substantive judgments about the value of projects proposed or conducted by the Executive Branch. Taken together, these fiscal provisions should enable Congress to do a much better job of seeing that federal funds are used wisely."

It would appear the gentlemen on the Hill are taking a page out of Secretary McNamara and President Johnson's book.

I don't want to disillusion or alarm you. While I foresee a lot of frustrations in the change-over period, I must also admit that we have a wonderful opportunity to get our rightful place in the sun.

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What can be done in the meantime? As the Director pointed out in his opening remarks, we've got to be more imaginative and flexible in our planning and reflect realistically the spill-over benefits. When we reforest a site for $70 an acre, is the only output board feet of lumber? What are the watershed spill-over benefits? Did we have a factor cranked in for wildlife, for recreation?

Take a page out of the range and S&W fellows' plans. In brush control they provide islands and strips for wildlife--it all doesn't come out crested wheatgrass. They also get bitterbrush. That lousy guzzler located correctly can buy us a lot of support from the interested public. That wintering ground on the Pokegama for interstate deer may be a more productive use than simply growing board feet. There's another side of the coin: the spillover benefits of recreation in an economically marginal timber management plan may make it feasible and pull it along.

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Think ahead - you don't take off into the wilderness some 100 miles without carefully tallying your equipment and what you plan to accomplish.

What economies can we generate? Can we sell a large block instead of two consecutive small blocks without violating silviculture needs? Can we write the road off for something beside board feet of timber? Is it laid out to realistically permit the write-off?

In summation may I say--we can no longer manage forest lands just for the trees--we must manage them for the people. It's my personal opinion if we can prove our worth as resource managers, the employment vacuum that will develop with the cessation of Vietnam will provide us a tremendous opportunity to become the leader in full resource management.

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PERSONNEL

by

Edgar B. Carroll
Chief, Division of Personnel

Human Resources

Human resources means people. People affect forests. Forests affect people. BLM employees affect forests in the manner destined to result in the greatest good for the greatest number of citizens. Whether a BLM employee is a forester or something else, he is a member of an organization of human resources dedicated to the task of managing a substantial part of this Nation's total natural resources.

I hope you will allow your Personnel Officer to reflect with pardonable pride how far this Bureau has come in recent years in recognizing the value of its human resources. Those of you who attended the Squaw Butte or Tony Grove Training Sessions from 1949-1954, the Bureau's earliest effort at formal training, introduced by Director Clawson, must be proud too, when you look at the talent in this room and compare it with those predecessor groups. How many of you here attended one of those sessions? The general quality of our staff, while far from perfect, has evoked much favorable comment. Just three weeks ago at a retirement luncheon for a Department official, a retired career Assistant Secretary of the Interior informed me that during the past several years he felt BLM had the best qualified staff of any bureau in the Department. He attributed this situation to the Bureau's aggressive College Recruitment Program and its leading participation in management training in the Department and specialized training in the colleges. Believe me, that gentleman rarely gives compliments and when he does, you can bet he means it. We must maintain and strengthen this impetus for others. John Crow as Associate Director and Chairman of the Training Committee shows every intention of doing just that. Larry O'Brien, Postmaster General, recently stated, "When an organization ceases to grow, it dies." The best insurance against obsolescence is employee growth.

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Now that you are all buttered up, let us talk a bit about human resources. The Bureau is concerned about human resources on three sides:

1. Public land users
2. BLM staff
3. Future generations of users and staff

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Let us confine our consideration to BLM staff, present and future, the actual and potential BLM staff. What we do with natural resources determines to what extent human resources are enriched thereby. It is important to successful performance in BLM for an employee to be aware of the sensitivities of people and to make every effort to understand the individual, whether he be a public land user or an associate.

No attempt is made here to dissect man completely, but discussion may be helpful in looking at him in the BLM work situation. Why? Because supervisor's knowledge of staff and how to motivate subordinates to be creative and productive is an area of management in greatest need of attention and offers best hope for eliminating obstacles to program accomplishment. That is, if the group isn't functioning as a team, if effective dialogue is missing and the supervisor is unaware of subordinates' needs, there is little expectation of maximum utilization. The test of a manager lies in his ability to plumb the minds of his staff--to learn what he needs to do to obtain their greatest contribution in accomplishing a mission. Al Maslow's concept of hierarchy of needs postulates the existence of physiological, security and self-actualization or psychological needs. In modern industrial society, the first two are relatively easily fulfilled, and no longer tend to motivate behavior. Psychological needs are to be striven for, and as success results, psychological energy of employees increases. There is no ratio or coefficient of staff to acres managed or public served. We get what we have through a budget system now in the process of refinement to PPBS. We have to do with what we have. It is little solace to complain that someone else has more to do less with.

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So, the test of a manager is the effective results he can get from services of human resources purchased with money. How does he accomplish this? What are good techniques? Why are some managers more effective than others? Does a manager have the latitude he needs to do a most effective job?

These are some of the questions we need to answer. And we need to do it in an increasing number of new ways, because some of the old ones have caught up with us. Nor is there any end in sight for recurring demands to economize. Change and innovation resulting in improvement are the order of the day. This can be good. Stultification is eliminated. The rewards are great for those who can change gracefully and swiftly, tossing aside barnacles of outdated work habits; narrow proprietary interests, and unwarranted prejudices in methods, policies, and people. The future may be bleak for those who cannot or will not adjust quickly to changes stimulated by management internally or technology externally. It isn't pleasant to observe fellow employees suffering emotionally from loss of power or prestige or the abandonment of a favorite program or procedure. Yet, we have seen much of this in the various Government reorganizations, including those in BLM. How

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does one defend against this? Certainly there will continue to be changes in the future, perhaps at a greater rate than in the past, according to the behavioral scientists. And with these changes, there will be an increasing number of job upsets requiring incumbents to take on new skills, new challenges and new personal problems for themselves. The days when a man aspired to a middle or upper level job, got it and held it until he died or was ready to relinquish it voluntarily, are expected to be substantially gone by 1975, we are told. Hence, flexibility, receptiveness to change, tolerance, patience, and sympathy are some of the ingredients each of us will need for the Sizzling Seventies. If we do not come by these and other traits naturally, we must find some way to acquire them.

This brings us to a point of asking, "Do we really know much about people--human resources?" Let us ponder a few facts. Secretary Gardner of HEW stated recently that in examining 20th Century research and developments, it is still in a "primitive state" in the social sciences. We are spending only a fraction of our public and private funds to learn more about human behavior, yet over 50 per cent of our hospital beds are occupied by mental patients. Archie pointed yesterday to the need for determining growth potential of areas of land. I'm sure he would agree also on the need for measuring and developing growth potential of BLM employees. Despite the inequity, new knowledges of people at work in organizations are being revealed at an unprecedented rate. Just last week, the University of Florida dedicated a seven million dollar Institute of Human Development, which will attempt to learn what makes man tick from the cradle to the grave. Those of you who were privileged last May in Portland or Denver at the DM Meetings to hear Jerold Wilmore's talk may recall some of the findings he presented and urged our managers to follow. Remember his reference to Doug McGregor's Theory X and Theory Y--the autocrat vs. the participative manager. I was pleased to learn yesterday that the California State Director is practicing a unique form of participative management in a workload project. And, of course, we know that the O&C District Managers have had frequent opportunity to express their views and make recommendations on policy and procedural matters for some time. Remember also Wilmore's reference to Barron's "Games People Play" and his humorous reference to strokes. Jerry did an effective job of stimulating us with an array of sage advice derived from his knowledge of current management literature, and his experiences as a consultant and trainer. But, he did not try to convince us there was any panacea for sure-fire results in our job of managing.

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I'm glad he chose that approach, because my knowledge of the BLM mission and the men we have managing toward that objective leadsme to conclude that an occasional reminder that provokes managers to think and act voluntarily is much more effective than a mandate. Recognition of the dignity of the individual in all of our interpersonal relationships is

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essential if we are to obtain the best performance. This is no less true of managers than of subordinates. The consent of individuals is preferred rather than coercion of groups. Subtle discontent results when persons have no stake, and they fight the system.

What we want is a balanced man--the whole human--free of frustration and neuroses. In the final analysis, we must depend on the supervisor to develop him in his own way. Many BLM supervisors have displayed excellent natural talent for this. In others, it may be latent. We need to bring it about in all of them. Leadership has been defined as the ability to spark somebody else into action.

We may recall Wilmore's quote of Dean Thiele of Harvard Business School--"A manager's basic assumption, his basic attitude and basic philosophy about the people and the things in the world about him will have more to do with his success or failure as a manager than any of the techniques he uses."

Two of Dr. Shipman's cohorts at the University of Washington, writing in this month's Harvard Business Review, say: "Managers need to know more about the fundamental relationship between how they value man and their own organizational lives, because no other variable weighs more heavily on the ultimate form and goal of organization and interpersonal relations."

Dean Samuel T. Dana in his book, "Forestry Education in America - Today and Tomorrow," lists as one of eight characteristics of a professional forester: "He has a comprehension of people and of human institutions that makes him at home as an individual, a citizen, and a professional man in the community in which he lives and works."

The Rockefeller Foundation in 1958 issued a report on its study of education, entitled, "The Pursuit of Excellence," which stated:

> "The greatness of a nation may be manifested in many ways--in its purposes, its courage, its moral responsibility, its cultural and scientific eminence, the tenor of its daily life. But ultimately the source of its greatness is in the individuals who constitute the living substance of the nation.
>
> . . .
>
> "Our devotion to a free society can only be understood in terms of these values. It is the only form of society that puts at the very top of its agenda the opportunity of the individual to develop his potentialities. It is the declared enemy of every condition that stunts the intellectual, moral, and spiritual growth of the individual. No society has ever fully succeeded in living up to the stern ideals that a free people set themselves. But only a free society can even address itself to that demanding task."

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The same article went on to state:

> "World War II marks the time at which there began to be clear recognition that the need for resources of land and capital had been surpassed by the need for resources of human talent. It was in World War II that we were pinched for men and brains. The scientific and engineering achievements of the war period provided dramatic evidence that some major problems could be solved and some major new inventions produced when imaginative and talented men set their minds to the task. There followed a great growth in industrial research, in industrial production, and in interest in the nation's supply of intellectual resources."

In 1960 the Advertising Federation of America was addressed by the president of one of its firms:

> "I ask only that we look for talent and excellence as avidly as we look for . . . many of our less valuable natural resources.
>
> . . .
>
> "Our educators, our ministers, our editors, our businessmen, our unions, and our organization . . . should join in a mammoth talent hunt to uncover (the) treasure of brains which . . . is hiding in unlikely places all over America."

Dr. Harold Benjamin illuminated the Inglis Lecture at Harvard through use of a fable.

> "The fable is the story of the school in the woods.
>
> 'All the animals had to take all the subjects. Swimming, running, jumping, climbing, and flying made up the required curriculum.
>
> . . .
>
> 'Some animals, of course, were better students than others. The squirrel, for example, got straight A's from the first in running, jumping, and climbing. He got a good passing grade, moreover, in swimming. It looked as though he would make Phi Beta Kappa in his junior year, but he had trouble with flying. Not that he was unable to fly. He could fly. He climbed to the top of tree after tree and sailed through the air to neighboring trees with ease. As he modestly

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> observed, he was a flying squirrel by race. The teacher of flying pointed out, however, that the squirrel was always losing altitude in his gliding and insisted that he should take off the approved fashion from the ground. Indeed, the teacher decided that the taking-off-from-the-ground unit had to be mastered first, as was logical, and so he drilled the squirrel day after day on the take-off.
>
> . . .
>
> 'The squirrel tried hard. He tried so hard he got severe Charley horses in both hind legs, and thus crippled he became incapable even of running, jumping, or climbing. He left school a failure, and died soon thereafter of starvation, being unable to gather and store nuts.'
>
> "Benjamin continued the fable to relate the difficulties of the snake, the eagle, and the gopher. I shall quote only the story of the eagle.
>
> 'The eagle was a truly brilliant student. His flying was superb, his running and jumping were of the best, and he even passed the swimming test, although the teacher tried to keep him from using his wings too much. By employing his talons and beak, moreover, he could climb after a fashion and no doubt he would have been able to pass that course, too, except that he always flew to the top of the problem tree or cliff when the teacher's back was turned and sat there lazily in the sun, preening his feathers and staring arrogantly down at his fellow students climbing up the hard way. The teachers reasoned with him to no avail. He would not study climbing seriously. At first he turned aside the faculty's importunities with relatively mild wisecracks and innuendoes, but as the teacher put more pressure upon him he reacted with more and more feeling . . . (and finally quit school altogether).'
>
> "I wonder how many human students have been similarly frustrated and had their talents stunted by being required to climb slowly step by step, instead of being encouraged to soar rapidly to the heights of which they were capable."

If we are to make full use of our intellectual resources, the first requisite is that we employ all the means at our command to encourage the development of talent. The second requisite is that we learn more about the social factors that aid or impede the development of talent.

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Three particularly significant developments which may have a bearing on Federal careers should be called to your attention at this point.

The first is the Federal Executive Assignment System directed by President Johnson last fall and which will be operative by November 1967. It is designed to provide skilled talent for all Federal executive positions in grades 16, 17 and 18. I predict that ultimately it will extend to positions in grades 13, 14, and 15. It will have a great effect in interchanging Federal career managers and executives among and between the various Federal agencies.

Second is the Intergovernmental Manpower Act of 1967 sent to Congress by the Civil Service Commission early in April. The Bill is designed to help assure qualified and trained administrative professional and technical employees for state and local governments and enable them to play their full roles in the years ahead. The Bill authorizes Federal agencies to provide further training of state and local employees by admitting them to training programs for Federal employees. It authorizes the Civil Service Commission to make grants for in-service training of state and local government employees. Further, it authorizes the President to extend the requirements for state and local programs that are Federally financed to follow standards of personnel administration that are based realistically on merit principles. It also allows Federal agencies to arrange for assignment or detail of their employees to state or local governments for periods up to two years with full protection of job rights and benefits and with provision for extension of the two-year limit. Federal agencies are allowed to arrange for the ready assignment or detailing of state and local employees to Federal work.

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The third is "Education for the Public Service Act of 1967," forwarded to Congress by the Department of Health, Education, and Welfare, which will help to educate the bright young men and women who will be needed so urgently in public service at all levels.

The implications are plain to see: Either we develop employee skills and make maximum use of them, or our better people go somewhere else to realize that quite human, natural goal. Look at the prospects of competition for talent:

	1955	1965	1975
State and local employees	4.7 mil.	7.7	11.4
	1957		1967
Federal aid to states and local governments	$4.1 bil.		$15.3 bil.

Creative Federalism is uniting state and local governments in a flexible partnership with a strong Federal Government to solve problems by distributing power and initiative in new ways that cut across old lines and arguments.

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A recent quote from Harvard Business Review reads: "Many governments are finding that scientific and managerial skills are the limiting factor in their economic rate of growth."

Two experts in industrial management proposed recently that business firms put people in their balance sheets. They pointed out that small and middle size companies are being gobbled up by larger ones principally because of the talent that is acquired, rather than the product or the anticipated profit margin of the smaller company. While they admit the proposal is bold and would be resisted initially by conventional accountants, they feel that a practical formula can be worked out to place a value on individual company executives. This is just another indication of the increasing attention being given to the value of individuals and the infinity of what they can accomplish.

The fact is, we really don't know what people can do until we give them a chance. And when we do and they succeed, we feel good, too. I dare say the supervisor who does the best job of leading his employees to the enjoyment of psychological success again and again is the happiest one, and one deserving of his Government's tribute. For each of those beneficiaries, in turn, will develop others and hence enrich our Nation's human resources.

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MULTIPLE USE CONSIDERATIONS

by

George L. Turcott
Chief, Division of Resource Standards and Technology

The Professional BLM Man and the Forest

This conference has been on the multiple-use management of forest areas. I certainly will make no attempt--at this juncture--to summarize the most worthy presentations of the previous speakers. In essence, their presentations were summaries of principles and concepts, problems, forecasts and challenges, and certain technical procedures and suggestions about managing BLM forest areas. The values you have gleaned from these proceedings are either fixed at this point or fixation will have to await another day.

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The particularizing theme of the conference has been "Man and the Forest." We have reviewed some of the social, economic and technological forces in our society which are having such a profound effect on current approach and future use of our forest resources and capital and human resources. Certain generalizations in this context were rather noteworthy to me. In my opinion some should be permanently useful. As illustration and example only:

1. That by far the greatest share of future national economic growth will stem from improvements in technology which in turn will result from the spin-off in the ever increasing effort in research and development. Increases in population will have less significant impact.

2. In timber management we can expect new applications of the processes of production--even greater mechanization of timber harvest moving toward a belt or pipeline process--genetic improvements in timber species--inventory and analysis of BLM administered timber resources through ADP with computerized choices or alternatives stemming from systems of variables measured in numbers. This will lead toward centralization of decision making and a comparative reduction of man days of work regarding human attention and judgment and care for any one forest site. (I am somewhat concerned about this latter point, although in the long term I know it is inevitable.)

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3. The Nation's total use of wood is expected to increase steadily. Projected demand for pulpwood will nearly triple by the year 2000; use of plywood and veneer may increase almost three times and lumber demand may rise by approximately 40 percent. Projections indicate that softwoods will account for 83 percent of the lumber used in 2000. Use of softwood for plywood and veneer is projected at 75 percent of the total consumption of those products. Softwoods utilized for pulpwood will compose 60 percent of the total pulpwood output in 2000. By the year 2000 the projected "supply" of softwood may fall short of the projected cut by an estimated 23.2 billion board feet of softwood growing stock and sawtimber.

4. It is possible to substantially increase Government timber production to decrease the gap between production and consumption forecast by 2000. However, certain alternative sources of production must be exploited to do it.

A. Increased reliance must be placed upon smaller trees, as well as on less desirable species for which current markets are scarce or nonexistent.

B. Utilization of wood now left behind on cut-over areas must be increased by expanding prelogging operations and by other salvage efforts.

C. Future yields in western softwood forests must be accelerated through increased reforestation, thinning and salvage of mortality from fire, insects and other destructive agents.

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5. There is a close interrelationship between land classification, as contemplated under the C&MU Act, and forest management. Proper classification provides tracts of land must be considered individually. Each tract is unique. Classification is a part of forest management because it describes what is on the tracts - what is likely to happen on them and around them - and what are the influences that will bring this about. In consequence, if retention classifications are soundly based, forest management programs will be in the strongest tenure position, although not one of full security. Good forest management assures tenure by recognition of all values.

6. A major objective of range management is range condition - not forage production. Forage production is secondary to the major objective of maintaining or improving the condition of the range. Good range condition is a key to most multiple uses of the rangeland resource and to sustained yield of resource values. Proper grazing use can be complemental to watershed protection, wildlife habitat management, fire protection and natural beauty.

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7. The Nation's energies are turning from the arts of production to the arts of consumption. A national cultural change is evolving. People's interests are turning to the quality rather than the quantity of living. Changes are already under way in the product mix from forest lands. (This is the underpinning--but it is the subtle force that is generating the application of the many-defined abstraction termed multiple use.) But in any event, the forest product mix is shifting toward sustained water production, wildlife, aesthetic, and recreational values. (And this has been the focal point of our conference--to the point there has been a dearth of timber talk.)

8. The "national spotlight" is on "water" and the intensity of interest being generated is rapidly increasing. The Bureau's primary involvement in water pollution control will be in control of sediment. The Federal Water Pollution Agency rates sedimentation as the number one pollutant in terms of magnitude of the problem. This developing national concern was expressed by John A. Carver, Jr., while Undersecretary of the Interior, when he stated, "There is no longer an excuse, if there ever was, for allowing our public land to deteriorate."

9. Classification of land for recreational purposes always brings up the question of the effects of such management on timber resources. Research indicates that forests can multiply by as much as ten times the amount of recreation they supply with minimal reduction in timber production. This potential of development may well be needed, for estimates indicate that demands for outdoor recreation in the West may reach 126 million visitor days annually by 1973, including 26 million days of intensive use.

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10. Any forest land management program must include resource protection or suffer the consequences. Protection may be likened to insurance for management investments and perpetuation of the intrinsic biology of the forest. There are some differences when public lands are involved. The values and investments are present, but there is no compensation when public forest land resources are damaged or destroyed. The public simply starts over at their expense.

11. Much of the big game, many upland small game species, and some waterfowl are hunted in the forest environment, and non-game species are numerous. Significantly, from the standpoint of the management of wildlife as a public recreation resource, nearly half of the forested area of the Nation is in public ownership. Many fishing waters are in, or have their source in forested areas. Sport and commercial demands for fish and wildlife far exceed the supply. Rationing systems through restrictive seasons and bag limits are necessary.

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All these forces, needs, and wants that I have illustrated, coupled with our increasing population, have a major impact on BLM managed forest areas--and on all land administered by BLM for that matter.

Now all of this review, prognostication, and conjecture is well and good. For we are public servants--and basically the mission of every Governmental agency is to produce and distribute goods and services to the American people.

But, in further highlighting this conference, let me shift the context of the words "Man and the Forest" from that of mission orientation in relation to needs and demands of the American people to another perspective. I can express it best in the form of a question. What is your feeling or belief--your deep down personal opinion about you--yourself--as a professional man in managing BLM forest areas?

Again, let me begin with a few basic generalizations that may help in any type of introspection or self-analysis. First, are you still constantly aware, as you were when you completed your college work, that a forest area is the end product of an age-old interaction of many forest-producing factors? I certainly hope so, but let's review the general theory. In the remote past the basic ingredients of a forest area were limited to climate, parent rock, and an amount of solar energy that depended on the angle of the exposure to the sun. In time other forest-producing ingredients were added to these basic components. Physical and chemical weathering assisted in soil development and deepening. Biotic activity culminated in a covering of living and dead plants--eventually in some areas a forest developed--the producer of many values and products. But there was a state of equilibrium developed among soil, climate, vegetation, and animals.

Now, if the preceding natural process is correct, there is a basic management principle to always keep in mind. It is useful to consider any particular forest area as an ecosystem of interacting plants and animals, all of which are affected by their environment. This ecosystem receives just so much energy and out of it comes so much in the way of products. The incoming energy originates from the sun and it is essentially consistent and cannot be changed significantly by land managers. The output is in the form of plants and animals. In such a system one cannot take out more than is put in. Chlorophyll-bearing plants convert the sun's energy to other energy forms used by animals and other plants.

When one enters such an ecosystem with the intent of management that will maximize yields of plants and animals, he does not achieve his ends by increasing the input of energy to the system. Instead he does it by:

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and I leave it up to you to decide for yourself in your area of operation. But if we are oriented principally by timber production goals, let's not call it forest management--let's call it what it is--self-defeating dualism.

Then there is this vague, almost mystical,multiple use approach--that all values and products can be identified and quantified, and that somebody, somewhere has the mental power to make on-site program decisions that will embrace objectively all the outputs. We aren't that good, we are merely mortal. We can't establish field level criteria for protecting or enhancing to the maximum all aesthetic values in the interest of the preservationists on the one hand--and on the other, harvest a near maximum timber volume for the production economist. If we think we are that good, then I call it self-deluding pluralism.

Well, what do we expect of the BLM professional resource man in on-site multiple use decision making:

1. He should be assured that he is expected to use some degree of subjective judgment in conjunction with what physical, social and economic facts and information and program directions are available to him. He should dedicate himself to the fullest in developing this information. Passivity is anathema to multiple use decisions.

2. Getting out onto the ground is mandatory in making such judgments.

3. He must never forget the basic resource ecological principles and what the available physical facts tell him of the on-site ecology involved. In other words, is it possible to produce and not bring about an unwanted disequilibrium?

4. He must recognize that he can't be a "self-contained" man. There no longer is such a thing in resource management. The smart professional seeks and readily considers the views and professionalism of others, including his co-workers.

5. He must accept the fact that he is in a public administration program, and that program direction will be given to him. Any frustrations from this won't be accepted - only sympathized with. What is expected is the application of that energy to an adapted decision on the ground.

In summary we expect multiple use professionalism to be performed by a person characterized as a "technician-plus" - a qualified resource husbandryman plus a public administrator. His decisions will be a synthesis of these knowledges and attributes. This is the art and the challenge of what it takes to be a professional BLM forest land

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A. Selecting or developing plants and animals which are more efficient in converting solar energy into useful products, and

B. Developing and applying knowledge of the physiological and ecological processes associated with growth and yields, and of the interacting factors which control these processes.

When one enters a forest land ecosystem with the intent of developing the optimum product mix, or of maximizing or preserving a primary product, he can achieve his objective only through a complete understanding of the interaction of soil, plants, climate and animals and the effects of disequilibrium among them.

Have we forgotten these basics in our concentration on tangible outputs?

Now we have come full circle. Through example generalizations I hoped to display an illustrative array of considerations and interrelationships. Just think how fluid and dynamic our considerations must be in relating goals, programs and methods to "the present and future needs of the American people." Considerations of demand--present and future--have been reflected in almost all of the previous talks. These will change over time and you must be prepared to adjust your programs accordingly.

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Interrelationships have also been brought out in the talks of each technical function. Interrelationships might be likened to kneading dough. When you press down here a corresponding bulge will form somewhere else. The whole moves with the part and yet the whole is more than the sum of the parts. Reflect a moment--isn't this true in any ecological relationship or public administration situation? So it is also in our management programs--when we do something in one place, it has an on-site impact, but it often has an impact on other programs elsewhere. We must be thinking of these interrelationships constantly and always be trying to see the whole impact of proposed programs.

But if we are aware of such interrelationships how do we quantify and collate them--and through thought processes--develop an intelligent (field level) decision? We are sometimes accused of practicing "forest management" that is based upon a whole battery of timber production facts but with only lip service given to silvicultural principles which might modify decisions to provide needed protection and enhancement of other resource values. Is the accusation substantially correct? Do we do this any more? -- I'm not sure --

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manager. Enjoy the challenge in developing this art. After all, such self-actualization is meaningful job satisfaction. Good luck in our collective quest to provide utilization of the various resources in the combination that will best meet the present and future needs of the American people.

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